Chhetri Academy

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GCSE MATHS

Statistics

Edexcel 1MA1 | Subtopic collection Topic 56

Charts, diagrams and time series

Foundation tier

Answers and examiner comments

229	2010-2025	Foundation
question groups	available papers	tier

Using this booklet

1. Answer numbers match the companion question booklet.
2. Follow the original question number on marking tables.
3. Examiner comments are included where available.

Name _____ **Date** _____

Some entries use full source marking material in an appendix. Any unavailable mark schemes are identified beside the relevant answer.

Question	Working	Answer	Mark	Notes
1 (a)		8	1	B1 cao
(b)		5	1	B1 cao
(c)			1	B1 cao

5	(a)		Walk	1	B1 cao
	(b)		5	1	B1 cao
	(c)	$4+6+9+5+1=25$	25	2	M1 for adding the frequencies 4,6,9,5,1 or adding 5 frequencies allow one misread error Ie 4+6+9+6+1 A1 cao

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Original question 7

The full source mark scheme begins on page 323. Use the original paper code, tier and question number shown above.

9		Types Tally Frequency	3	B3 for correct table with all three aspects Aspect 1:'method of travel' or for at least 3 of bus, car, walk, ,other etc. Aspect 2: 'tally' or tally marks or 'frequency' or 'number of people' Aspect 3: 'frequency' or frequencies or 'total' or totals or 'number of people' B2 for two aspects B1 for one aspect

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Question	Working	Answer	Mark	Notes
10 (a)		3	1	B1 cao
(b)	$0\times4+1\times5+2\times4+3\times7+4\times4=50$	50	2	M1 for *fx* calculated (could be implied by at least 2 correct) A1 cao
(c)	$360°\div24=15$ Sector angles: W=150; D=90; L=120	Angles drawn, labelled	3	M1 for $360\div24$ or 15 seen or one angle correct in pie chart ($\pm2°$), ignore all labels, or one correct angle in the table A1 for any two angles correct in pie chart. Ignore labels A1 for fully correct and labelled pie chart All angles ±2º

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Question	**Working**	**Answer**	**Mark**	**Notes**
11*	714 × 2 =1428 714 × 0.95 = 678.30 678.30 × 2 = 1356.60 1428 + 1356.60 = 2784.60 802 × 2 = 1604 802 × 0.85 = 681.70 681.70 × 2 = 1363.40 1604 + 1363.40 = 2967.40	Comparison	5	B1 for identifying 714 and 802 M1 for $\frac{95}{100}\times'714'$ oe or $\frac{85}{100}\times'802'$ oe M1 for 2 × 'adult' + 2 × 'child' oe for at least on e holiday A1 for 2784.6(0) and 2967.4(0) or 2785 and 2967 C1 for comparing the costs of their two holidays for 2 adults and 2 children and clearly indicating which is cheaper. Conclusion must clearly follow from working. QWC: Decision and justification should be clear with working clearly presented and attributable. (allow full marks for a candidate who has calculated the cost per day for each holiday (397.8(0) and 211.95(7..)) and compares these costs accordingly.)

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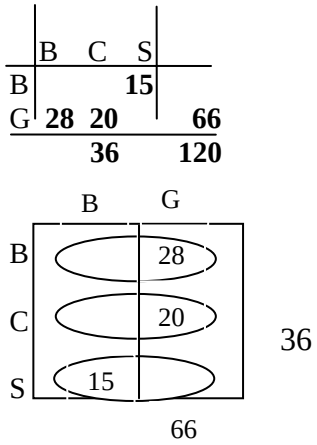
Question	Working	Answer	Mark	Notes
12 (a)		67	1	B1 cao
(b)	$84-58=26$	26	2	M1 for $84-58$, accept 58 to 84 and $58-84$ A1 cao
(c)		Two comparisons	2	Ft B1 for heart rates faster after walking , bigger median, median increase by 11 Ft B1 for heart rates more spread out after walking, bigger range, range increases by 11 Statements must be entirely true and not contradictory

13		51	4	M1 for a two-way table or Venn diagram with bowling, cinema, skating, boys and girls labelled or a list of at least two combinations clearly labelled. M1 for attempt to find an unknown eg 66 – 28 – 20, 120 – 66, 36 – 20 A1 for 16 or 18 or 54 or 23 or 33 A1 cao (Note: 36 + 15 = 51 scores no marks)

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Question		Working	Answer	Mark	Notes
14*		13.55 × 1.65 = 22.3575 3.10 ÷ 160 × 1000 = 19.375 OR 13.55 × 1.65 = 22.3575 22.3575 ÷ 1000 × 160 = 3.5772 OR 3.10 ÷ 1.65 = 1.8787… 1.8787…÷ 160 × 1000per kg OR $1355 \div 1000 = 1.355$ p/g 3.10 ÷ 1.65 = 187.87…p 187.87…÷ 160 = 1.1742…p/g OR 3.10 ÷ 160 = 0.019375 SF/g 13.55 × 1.65 ÷ 1000 =0.0223575SF/g	Switzerland, with correct explanation	4	M1 for a correct method to obtain two comparable weights e.g. cost of 1kg in Switzerland, ÷ 160 × 1000, × 6.25 (cost of 1 kg in England given) or cost of 160g in England, ÷ 1000 × 160 (cost of 160g in Switzerland given) or cost per gram in each country, ÷ 160 and ÷ 1000 or cost of 800g in each country M1 for converting £ to Swiss francs or Swiss francs to £ (other than £1=1.65 SFr) A1 for two correct values (using same units) for comparison C1 for Country identified from a clear attempt to use comparable weights and prices. QWC: Decision must be stated, with calculations clearly attributable

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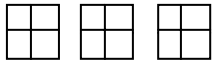
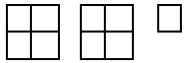
Question	Working	Answer	Mark	Notes
1 (a)		40	1	B1 cao
(b)		28	1	B1 cao
(c)(i)	24 ÷ 8 = 3		2	B1 cao
(ii)	18 ÷ 8 = 2¼			B1 cao

3	(a)		Climbing	1	B1 cao
	(b)	7 + 4 + 3 + 6	20	2	M1 for adding at least 2 correct readings (eg. 7 + 6, or 7 + 6 + 3; however answers alone of 13 or 16 get no marks) A1 cao
	(c)		Bar of height 7	1	B1 for a bar of height 7, shaded or un-shaded on either side of the boys bar

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Question	Working	Answer	Mark	Notes
6 (a)		3, 7, 5, 3, 2	2	M1 for at least 1 correct frequency or 1 correct tally cell A1 all frequencies correct (with or without the tally column completed or incorrectly completed)
(b)		2	1	B1 for 2 or ft from (a)
(c)	20 + 18 + 23 + 17 + 15 + 21 114 ÷ 6	19	2	M1 for "(20 + 18 + 23 + 17 + 15 + 21)" [=114] ÷ 6 A1 cao [SC: B1 for an answer of 96.5 if M0 scored]

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10	(a)		27	1	B1 cao
	(b)	(27 + 1)/2 = 14 so 14th is median value	23	1	B1 cao
	(c)	53 - 8	45	2	M1 for 53-8 A1 cao [SC: B1 for 8 to 53 or 8 - 53 oe or 8 and 53 identified if M0 A0 awarded]

5MB1F_01

Question	Working	Answer	Mark	Notes
11 (a)	15 matches = 150° 1 match = 10° 120 ÷ 10 = 12	12	2	M1 for 150 ÷ 15 (=10) or 120 ÷ 10 [Note: 10 seen on the answer line with no working gets no marks] A1 cao
(b)		Not enough information ticked and reason given	1	B1 for "Not enough information" ticked (or not and not contradicted) and correct explanation eg Explains that we don't know actual number of matches hockey team won. OR explains we don't know number of matches. OR explains that pie charts only show the proportions (eg. “cannot compare sizes of angles only”) [B0 for any contradictory responses]

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<table>
<tr><th>Question</th><th>Working</th><th>Answer</th><th>Mark</th><th>Notes</th></tr>
<tr>
<td>12</td>
<td>30 - 17 = 13
5 - 3 = 2
13 -2 - 7 = 4
4 + 4

OR
17 – 4 – 3 = 10
10 + 7 = 17
30 – 5 – 17

OR
17 – 4 = 13
13 + 7 = 20
20 + (5-3) = 22
30 - 22

<table>
<tr><td></td><td>B</td><td>G</td><td>Total</td></tr>
<tr><td>Packed</td><td>4</td><td></td><td></td></tr>
<tr><td>School lunch</td><td></td><td>7</td><td></td></tr>
<tr><td>Home</td><td>3</td><td></td><td>5</td></tr>
<tr><td>Total</td><td>17</td><td></td><td>30</td></tr>
</table>
</td>
<td>8</td>
<td>4</td>
<td>M1 for calculation of total girls 30 - 17 (= 13)
M1 for calculation of girls going home 5 - 3 (= 2)
M1 for calculation of girls having packed lunch
"13" - "2" - 7 (= 4)

M1 for 17 – 4 – 3 (= 10)
M1 for “10”+ 7 (= 17)
M1 for 30 – 5 – “17”

M1 for 17 – 4 + 7 (= 20)
M1 for “20” + (5 – 3)
M1 for 30 – “22”

A1 cao

[Interim answers may appear in a 2-way table or Venn diagram]
M1 for a 2-way table or diagram, with clear labeling, showing at least 3 pieces of the given information correctly placed
A1 for 13 (girls) or 10 (boys, school lunch)
A1 for 2 (girls, home) or 17 (total school lunch)
A1 cao
[Note: for the award of the final A1, the 8 in any diagram must be highlighted, in some way, to be the required answer]</td>
</tr>
</table>

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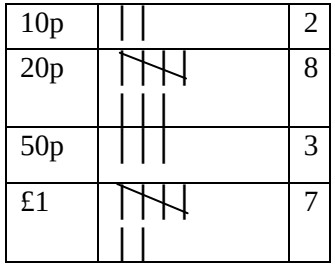
Question	Working	Answer	Mark	Notes
1 (a)			3	B3 for a fully correct table showing all tallies and frequencies (B2 for 2 or 3 correct tally and related frequency entries or for 4 correct tallies or for 4 correct frequency totals) (B1 for 1 correct tally or 1 correct frequency)
(b)	$10 \times 2 + 20 \times 8 + 50 \times 3 + 100 \times 7$ $20 + 160 + 150 + 700$	10.3**0**	2	M1 for $10 \times$ "2" or $20 \times$ "8" or 160 or 1.6(0) or $50 \times$ "3" or 150 or 1.50 or $100 \times$ "7" or 700 or evidence of adding all 20 original coin values A1 ft from table shown using correct money notation.

2	(a)		E	1	B1 cao
	(b)		A	1	B1 cao
	(c)		16	1	B1 cao
	(d)		28	1	B1 cao
	(e)		1 and a half cameras	1	B1 cao

Question	Working	Answer	Mark	Notes
3 (a)		Monday and Friday	2	B1 for Monday B1 for Friday
(b)	Alfie $6 + 8.5 + 8 + 4.5 + 4.5$ $= 31.5$ Viv $7 + 8.5 + 6 + 3 + 5 = 29.5$ $31.5 - 29.5$ or $-1 + 0 + 2 + 1.5 - 0.5$	2 hours	3	M1 for Alfie = $6 + 8.5 + 8 + 4.5 + 4.5$ ($= 31.5$ or 31.30) or Viv = $7 + 8.5 + 6 + 3 + 5$ (29.5 or 29.3) Allow one error reading 5 values M1 (dep) for "31.5" – "29.5" (If incorrect values used must be Alfie's total – Viv's total) A1 cao or M1 for at least two of - 1 or 0 or 2 or 1.5 or – 0.5 seen, may be on diagram (ignore signs) M1 for - 1 + 0 + 2 + 1.5 – 0.5 A1 cao

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Question	Working	Answer	Mark	Notes
6 (a)	$\frac{90}{360}$	$\frac{1}{4}$	1	B1 for $\frac{1}{4}$ oe or 25% or 0.25 or quarter
(b)	360 – (42 + 90 + 108) = 360 – 240 = 120 Followed by 120 ÷ 20 = 6° /person 90 ÷6 OR $\frac{90}{120}=\frac{3}{4}$ $\frac{3}{4}$ of 20 OR 120 = $\frac{1}{3}$ of the whole Total number = 20×3=60 $\frac{1}{4}$ of 60	15	4	M1 for 360 – (42 + 90 + 108) A1 for 120 M1 for 90 ÷ (“120” ÷ 20) A1 cao or M1 for 360 – (42 + 90 + 108) A1 for 120 M1 for $\frac{3}{4}$ of 20 A1 cao or M1 for 360 - (42+90+108) A1 for 120 M1 $\frac{1}{4}$ of 60 A1 cao

8		$\frac{5}{24}$ oe	3	B3 for $\frac{5}{24}$ oe [B2 for $\frac{'5'}{24}$ where "5" is in the table or clearly identified as the number of boys who walk. (Accept final answer of 0 if accompanied by 0 in the table or indication that no boys walk)] [B1 for $\frac{a}{24}$, where $a \leq 13$ or 5 seen or 0 alone or $\frac{0}{24}$ given only as final answer.]

Question	Working	Answer	Mark	Notes
11 (a)		14 | 8 15 | 2 4 16 | 0 2 4 4 8 17 | 0 3 4 9 14 | 8 = 148 cm	3	B2 for a fully correct ordered diagram (B1 for correct unordered diagram or ordered with at most two errors) B1 for a correct key eg 14 | 8 = 148 cm (cm not required)
*(b)	Boy's Median = 170 Girl's Median = 164 Boy's Mean = 170(.38) Girl's Mean= 164 Boy's Range = 27 Girl's Range = 31 15 | 7 9 16 | 2 6 8 9 17 | 0 3 4 6 6 18 | 1 4	Compares: medians/means + Range + Spread	3	A maximum 2B marks from: B1 for a correct mean or median for either the boys or the girls. B1 for a correct range for either the boys or the girls. B1 for a correct stem and leaf diagram drawn for the boys (no need for a key) C1 for any correct comparison, which includes the boys and the girls, of either 2 correct (ft) medians or 2 correct (ft) means or 2 correct(ft) ranges or a correct statement following from comparing the correct stem and leaf diagrams, which includes the boys and the girls.

Question		Working	Answer	Mark	Notes
1	(a)		4, 6, 8, 2	2	B2 all frequencies correct (B1 2 frequencies correct OR 2 tallies correct OR 1 tally with its frequency correct)
	(b)		silver	1	B1 for silver or ft from table

2	(a)		18	1	B1 cao
	(b)		¼ box 3 full size boxes	2	B1 cao B1 cao

Question		Working	Answer	Mark	Notes
5	(a)		7	1	B1 cao
	(b)		Wednesday	1	B1 cao
	(c)	Andrew: 8 + 10 + 17 + 10 (=45) Rachel: 16 + 8 + 12 + 7 (=43) Then 45 – 43 = 2 OR Differences: -8, 2, 5, 3 -8 + 2 + 5 + 3 = 2	2	3	M1 for Andrew: 8 + 10 + 17 + 10 (at least 3 correct) (=45) or: Rachel: 16 + 8 + 12 + 7 (at least 3 correct) (=43) M1 (dep) for "45" – "43" = 2 A1 cao OR M1 for Differences: at least 3 from 2, 5, 3, 8 M1 (dep) for "2" + "5" + "3" – "8" (at least 3) A1 cao

Question		Working	Answer	Mark	Notes
7			Diagram or chart	4	B1 labeling or key to identify boys / girls B1 5 correct sports labels to identify the sports B1 diagram or chart (combined or separate) enabling comparison eg dual bar chart, bar chart, pie chart, composite bar chart, line graphs C1 (dependent on at least B1) fully correct diagram or chart with all labels correct and clear

9	(a)		Data collection sheet	3	B1 labels (eg transport) B1 tallies B1 frequency (or total, etc.)
	(b)		Reason	1	B1 biased; not everyone uses the road and comes by car, she will only get people who travel by car, etc.; more times are needed other than just one afternoon

5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*10		(2×625)+200+350=1800 (2×725)+150+275=1875 (2×640)+(2×170)=1620	Sunswift at £1620	5	M1 for correctly choosing a table column (11-20 June) M1 for use of 2 adults and 2 correctly aged children (eg 4 corresponding figures for at least one hotel) M1 for using costings consistently for at least two hotels (eg two of 625,200,350; 725,150,275; 640,170, 170 or ft their choice of table column) A1 for showing correct totals: 1800, 1875 and 1620. C1 (dep on at least M1 awarded) for using three comparable figures identified with each hotel, correctly deduces the cheapest hotel, and clearly names it.

11	(a)	construction = 120° hairdressing = 168° tourism = 72°	120° 168° 72°	3	M1 for correct working to find an angle (could be implied by one angle drawn correctly on the pie chart. A1 all three angles drawn ±2° B1 (dep on M1) correct labels NB: stating the angles is not labels
	(b)		explanation	1	B1 ft reason given eg NO and "we don't know the actual figures", "there could be less Y10 students", or refers to the fact that the totals for the pie charts (or the sample groups) could be different NB: YES could also be justified.

Question		Working	Answer	Mark	Notes
1	(a)		42	1	B1 cao
	(b)		81	1	B1 cao

2	(a)		14	1	B1 cao
	(b)		Bus	1	B1 cao
	(c)	8 + 2 + 14 + 6 + 3 + 7	40	2	M1 for (8+) 2+14+6+3+7 or ft from (a) A1 for 40 or ft from (a) SC: award B1 for 32
3*			diagram or chart	4	B1 for suitable labelling or key to differentiate Alexa and Ryan B1 for 5 correct day labels OR a linear scale B1 for accurately representing the data C1 for fully correct diagram or chart with correct and clear labelling and linear numerical scale

Original question 3

The full source mark scheme begins on page 339. Use the original paper code, tier and question number shown above.

10	(a)	299 – 140	159	1	B1 cao
	(b)	140 − 45 – 37 or 140 – 82 58 + 47	105	2	M1 for 140 − 45 − 37 or 58 seen A1 cao
	(c)		(T,T) (T,C) (T,S) (C,C) (C,S) (S,S)	2	B2 All 6 combinations present with no incorrect combinations (B1 at least 3 different combinations) Ignore repeated combinations for B1 or B2

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Question		Working	Answer	Mark	Notes
11		360 ÷ 60 Apple = 18 × 6 = 108 Banana = 23 × 6 = 138 Orange = 9 × 6 = 54 Pear = 10 × 6 = 60	108, 138, 54, 60	4	M1 for evidence of method for at least one angle (could be implied by one correct angle on pie chart or working or in table) A2 for all angles drawn correctly (±2°) (A1 for at least one angle drawn correctly or all angles correct in the table) B1 for sectors labelled with fruit names (dependent on at least one angle drawn correctly and exactly 4 sectors)

Question		Working	Answer	Mark	Notes
14	(a)		7 | 1 3 8 8 | 1 4 4 7 8 9 | 1 2 3 5 6 6 6 8 10 | 0 1 3 4 Key: 7 | 1 means 71cm	3	B2 for fully correct diagram Accept a stem of 70, 80, 90, 100 (The order of the numbers in the stem may be reversed) (B1 for ordered leaves or unordered leaves (with one error or omission)) B1 for a correct key (units may be omitted)
	(b)	104 − 71	33	1	B1 for 33 or ft from diagram
	(c)		92.5	1	B1 for 92.5 or ft from diagram if ordered.

3	(a)		4, 7, 4, 3, 2	2	M1 for at least 3 correct tallies **or** at least 3 correct frequencies A1 for all frequencies correct
	(b)		7	1	B1 for 7 **or** ft from frequencies in (a) or tallies if no frequencies
	(c)		Diagram drawn	3	M1 for bar chart or other suitable chart with at least 3 correct heights for their scale (can f.t.) A1 for all 5 bars correctly labelled and vertical axis correctly scaled A1 for fully correct **or** ft frequencies in (a) **OR** M1 for pictogram with at least 3 correct rows (can f.t.) A1 for correct labels on all 5 rows and correctly key A1 for fully correct **or** ft frequencies in (a) **OR** M1 for pie chart with at least 3 correct sectors ± 2° (can f.t.) A1 for all 5 sectors correctly labelled A1 for fully correct **or** ft frequencies in (a)

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8	(a)		Walk	1	B1 cao
	(b)	24 ÷ 4 =	6	2	M1 for 24 ÷ 4 oe or ¼ oe seen A1 cao

1MA0_1F

15	(a)		4	1	B1 cao
	(b)	9.5 – 4.75 = **OR** 9.5 ÷ 2 =	4.75	2	M1 for 9.5 – 4.75 **or** 9.5 ÷ 2 **or** 4.75 – 9.5 A1 cao
	(c)		6	1	B1 cao
	(d)	12 × 4 =	48	2	M1 for × 4 seen **or** identifying + 0.5 for every 2 inches **or** 12 + 12 + 12 + 12 oe **or** build up method eg 12, 24, 36, 48 allow one error A1 cao

20	(a)		6	1	B1 cao
	(b)		44	1	B1 cao
	(c)		31	2	M1 for 60 – 29 **or** 29 – 60 **or** any correct method that is attempting to find the difference between 29 and 60 (allow 1 arithmetic error) A1 cao

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
21*		Angle *DBC* = (180 – 50) ÷ 2 Base angles of isosceles triangle are equal Angle *ABD* = 180 – 65 Angles on a straight line add up to 180 *x* = 180 – 20 – 115 Angles in a triangle add up to 180 **OR** Angle *DBC* = (180 – 50) ÷ 2 Base angles of isosceles triangle are equal *x* = 65 – 20 Exterior angle of triangle is equal to sum of interior opposite angles **OR** Angle *DCB* = (180 – 50) ÷ 2 Base angles of isosceles triangle are equal *x* = 180 – 50 – 20 – 65 Angles in a triangle add up to 180	45 with reasons	4	M1 for (180 – 50) ÷ 2 oe **or** 65 seen M1 for 180 – 20 – (180 – "65") **or** "65" – 20 or 180 – 50 – 20 –'65' oe C2 for *x* identified as 45 with full reasons QWC: Reasons clearly laid out with correct geometrical language used (C1 (dep on M1) for one reason QWC: Reasons clearly laid out with correct geometrical language used) NOTE: *x* = 45 with no working or without any correct angles marked on the diagram cannot score.

1MA0_1F

3	(a)		24	1	B1 cao
	(b)		10	1	B1 cao
	(c)		2 circles 3 ½ circles	2	B1 for 2 circles in Thursday B1 for 3 ½ circles oe in Friday

17	(a)	84 ÷ 7 (=12) 120 ÷ 12	10	2	M1 for 84÷7 (=12) or 7 ÷ 84 (=0.083..) A1 cao
	(b)		Don’t know + reason	1	B1 'Don't know' or 'No' with reason eg. Need to know how many medals Russian Federation won **or** pie chart shows proportion not number of medals won

Question		Working	Answer	Mark	Notes
1	(a)		Mary, 5, blue, dog	1	B1 cao
	(b)		2	1	B1 for 2 or ft from their table
	(c)		cat	1	B1 for cat or ft from their table

2	(a)	2 × 12	24	1	B1 cao
	(b)	e.g. 12 + 6	18	2	M1 for 4.5 × 12 – 3 × 12 or (4.5 – 3) × 12 or 12 + 6 or 6 seen "54" – "36" oe A1 cao
	(c)	2.75 × 12 × 8	2.64	3	M2 for complete method seen, "2.75×12"×8 or "12+12+9"×8 or "2.75 × 8"×12 or "33"×8 "96" + "96" + "72" or the digits 264 seen (M1 for 2.75×12 or 12+12+9 or 24+9 or “33” or 2.75×8 or 12×8 or 24×8 or 9×8 or 192 seen or 96 seen or 72 seen) A1 cao (SC M1 (12+12+8)×8 but not 32×8) Note: The method marks can also be awarded if the candidate uses 0.08

Question		Working	Answer	Mark	Notes
5	(a)		Thursday	1	B1 cao
	(b)		45	1	B1 cao
	(c)		Bar chart completed	2	B2 for bars of correct length, correctly shaded (condone Sophie's bar left unshaded) (B1 for one correct length bar with correct shading or two correct length bars with incorrect or no shading)
	(d)		Comparison	1	B1 for one correct comparison, e.g. Sophie spent more time (on the Internet) at the beginning of the week than Zach (Note: if candidates quote total amounts of time spent on the internet they must be correct or support by evidence of how they got them. Sophie: 215min or 3h35min Zach: 240min or 4h)

5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
***6**		e.g. £25 = $40, so £100 = $160 £20 = $32, so £40 = $64 £100 + £40 = $160 + £64 = $224 (London) $220 (New York)< $224(London)	New York is less expensive	4	B1 for stating a correct conversion fact from the graph $40 ≡ £25oe M1 (indep) ft for a complete method to convert £ to $ using their conversion fact e.g. 40÷25×140 oe A1 ft for $224 C1 ft (dep on M1) for more (expensive) in London oe OR B1 for stating a correct conversion fact from the graph £25 ≡ $40 oe M1 (indep) ft for a complete method to convert $ to £ using their conversion fact e.g 25÷40×220 oe A1 ft for £137.5(0) C1 ft (dep on M1) for less (expensive) in New York oe

Question		Working	Answer	Mark	Notes
8	(a)		3, 7, 5, 4, 2, 3	2	M1 for at least one correct frequency or tally A1 for 3, 7, 5, 4, 2, 3 cao (B2 for correct frequencies without the use of tallies)
	(b)		2	1	B1 for 2 or ft from their frequency table
	(c)		Diagram or chart	3	M1 (ft from their frequency table) for a diagram or chart, e.g. bar chart, stick graph, pictogram, pie chart, showing correct data for at least 3 scores M1 (indep) for correct scale and label on vertical axis or fully correct labelling on horizontal axis or a suitable key A1 (ft from their frequency table) for fully correct diagram or chart (to include all axes labelled)

9			15, **17**, 12, 44 **18**, 22, **16**, **56** **33**, **39**, 28, 100	3	B3 fully correct table (B2 for 4 or 5 correct entries) (B1 for 2 or 3 correct entries)

Question		Working	Answer	Mark	Notes
14	(a)		5 | 9 6 | 3 5 6 6 7 | 1 2 5 5 6 7 9 9 8 | 3 9 Key: eg, 7/2 represents 72	3	M1 for at least 2 correct 'rows' with correct stem and correct ordered or unordered leaf A1 for a fully correct ordered stem and leaf diagram B1 for a key [Ignore spacing on leaves provided the order is` correct]
	(*b)	Gill: HV 95 >; LV 75 >; Mean 80 >; Range 20 < Jamal: HV 89; LV 59; Mean 73; Range 30	Comparisons	5	M1 for '72+59+76+...'÷15 or 1095 ÷ 15 (= 73) M1 for 95 – 75 (=20**) or** '89' – '59' (= 30) or '89' and '59' seen ft from their stem and leaf diagram in (a) A1 for mean of Jamal's scores is 73 cao or for ranges of 20 and 30 cao C1 (dep on first M1) ft for a correct comparison of mean scores, e.g. Gill's mean score > Jamal's mean score oe C1 ft for a correct comparison of ranges, (dep on M1 awarded for correct method to find range) e.g. The range of Gill's scores < The range of Jamal's scores **or** a correct comparison of both end values (dep on M1 awarded for '89' and '59' seen) , e.g. Gill's lowest score > Jamal's lowest score and Gill's highest score > Jamal's highest score. oe [For the award of C2, the word 'score' must be explicitly stated. If not deduct 1 mark]

5	(a)			2	B1 for 6 tins drawn for Thursday B1 for 3 + ½ tins drawn for Friday. Use professional judgement re sketch of semicircle
	(b)		15	2	M1 for (4.5 – 3)×10 or 1.5×10 or 4.5×10 – 3×10 or 45 – 30 or 10 + 5 A1 for 15

1MA0_1F

Question		Working	Answer	Mark	Notes
18	(a)		21	1	B1 cao
	(b)		17	1	B1 cao
	(c)	55 – 15	40	2	M1 for 55 – 15 (accept 15 – 55 or 15 to 55 or 55 to 15 or 15, 55 but not 15 + 55) A1 cao
19*		360 – 200 – 90 (=70) (180 – '70') ÷2 angles at a point add to 360°, angles in a triangle add to 180°, base angles of an isosceles triangle are equal	y = 55 reasons	4	M1 for 360 – 200 – 90 oe M1 for (180 – '70') ÷ 2 Reasons: angles at a point add up to 360° angles in a triangle add up to 180° base angles of an isosceles triangle are equal C2 for y = 55° and all correct reasons Note: An answer of 55° alone, is not enough; y = 55° must be explicitly stated or clearly shown on the diagram (C1 for one correct reason) Note: the award of any C mark is dependant upon the award of at least M1

1MA0_1F

Question		Working	Answer	Mark	Notes
21		e.g. 41 – 21 (=20) 49 – 10 – 20 (=19) 16 + 19 = 35 OR (100 – 49) – (16 + 21) (=14) 14 + 10 (=24) 100 – (41 + 24) = 35 w b c Boys 16 21 **14** **51** Girls **19** **20** 10 49 **35** 41 **24** 100	35	4	M1 for 41 – 21 (= 20) or M1 for 49 – 10 – '20' (= 19) M1 for 16 + '19' A1 cao OR M1 for 100 – 49 (=51) M1 for '51' – 21 – 16 (= 14) **and** '14' +10 (= 24) M1 for 100 – (41 + '24') A1 cao NB working may appear in table or diagram

2	(a)	<table><tr><th>Fruit</th><th>Tally</th><th>Freq</th></tr><tr><td>Currant</td><td>𝍸</td><td>5</td></tr><tr><td>Prune</td><td>𝍸</td><td>5</td></tr><tr><td>Raisin</td><td>𝍸 |</td><td>6</td></tr><tr><td>Sultana</td><td>𝍸 |||</td><td>8</td></tr></table>	Correct tally	2	M1 for at least 2 tallies or frequencies correct A1 for 4 correct frequencies

1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
2	(b)	Angles: Currants (75°) Prunes (75°) Raisins (90°) Sultanas (120°)	Diagram drawn	3	M1 for bar chart or other suitable chart with at least 2 correct heights for their scale or ft from (a) M1 for all bars correctly labelled and vertical axis correctly scaled A1 for fully correct bar chart or ft from (a) OR M1 for pictogram, at least 2 correct rows or ft from (a) M1 for correct labels on all rows and key A1 for fully correct pictogram or ft from (a) OR M1 for stick graph with at least 2 sticks of correct height for their scale or ft from (a) M1 for all sticks correctly labelled and vertical axis correctly scaled A1 for fully correct stick graph or ft from (a) OR M1 for pie chart with at least 2 correct sectors (±2°) or 2 angles correctly calculated or ft from (a) M1(dep) for all sectors correctly labelled A1 for fully correct pie chart or ft from (a)

1MA0_2F

<table>
<tr><th colspan="2">Question</th><th>Working</th><th>Answer</th><th>Mark</th><th>Notes</th></tr>
<tr><td>17</td><td></td><td>
<table>
<tr><th>Bird</th><th>Frequency</th><th>Angles</th></tr>
<tr><td>Magpie</td><td>15</td><td>75</td></tr>
<tr><td>Thrush</td><td>10</td><td>50</td></tr>
<tr><td>Starling</td><td>20</td><td>100</td></tr>
<tr><td>Sparrow</td><td>27</td><td>135</td></tr>
</table>
Angles $\frac{15}{72}\times 360$, $\frac{10}{72}\times 360$, $\frac{20}{72}\times 360$, $\frac{27}{72}\times 360$

OR

$\frac{75}{15}\times 10$, $\frac{75}{15}\times 20$, $\frac{75}{15}\times 27$
</td><td>Correct pie chart</td><td>3</td><td>
M1 for any one of $\frac{15}{'72'}\times 360$, $\frac{10}{'72'}\times 360$, $\frac{20}{'72'}\times 360$, $\frac{27}{'72'}\times 360$ oe
('72' must clearly come from adding frequencies)
A1 for 75 seen from correct working or 50 seen or 100 seen or 135 seen or
one sector of angle 50° or 100° or 135° labelled correctly with bird's name or
all sectors correctly drawn
A1 for correct pie chart fully labelled with birds' names

OR

M1 for $\frac{'75'}{15}\times 10$ or $\frac{'75'}{15}\times 20$ or $\frac{'75'}{15}\times 27$
('75' must be in the range 73 - 77)
A1 for 50 seen or 100 seen or 135 seen or
one sector of angle 50° or 100° or 135° labelled correctly with bird's name or
all sectors correctly drawn
A1 for correct pie chart fully labelled with birds' names

NB. Allow a tolerance of $\pm 2^o$ on all drawn angles
</td></tr>
</table>

1MA0_2F

2	(a)		24	1	B1 for 24
	(b)		6	1	B1 for 6
	(c)	Wed = 12 Thurs = 12 + 6 = 18 or 6 more = 3 extra circles		2	M1 for identifies 6 bunches as 3 circles or '12' + 6 or gives an answer of 9 circles A1 for 9 circles in two clusters of 4 and an additional circle

4		<table><tr><th>Colour</th><th>Tally</th><th>Frequency</th></tr><tr><td>red</td><td></td><td></td></tr><tr><td>black</td><td></td><td></td></tr><tr><td>white</td><td></td><td></td></tr><tr><td>silver</td><td></td><td></td></tr></table>	Data collection sheet	3	B3 for a correct data collection sheet that has at least 3 colours: the tally column and frequency column must have headings (B2 for any 2 of these aspects) (B1 for any 1 of these aspects)

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12		<table><tr><th></th><th>H</th><th>T</th><th>F</th><th>G</th></tr><tr><td>M</td><td>3</td><td>8</td><td>15</td><td>9</td></tr><tr><td>W</td><td>6</td><td>14</td><td>7</td><td>1</td></tr></table>	Diagram or chart	4	B1 for a key or suitable labels to identify the men and women. The key may be ignored if unclear provided the graph is clear, ie if different colours are used to shade in the graph. Give benefit to candidate. B1 for a diagram(s) or chart(s) set up for comparison, showing data for at least 3 sports e.g. dual bar chart, composite bar charts, etc (or frequency polygons) B1 for correct heights for men or women or totals C1 for a fully correct diagram or chart to include ‘frequency’ oe

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Question		Working	Answer	Mark	Notes
13			**10** **10** (3) **23** (18) **4** (9) (31) **28** (14) **12**(54)	3	B3 for all 6 correct (B2 for 4 or 5 correct) (B1 for 1 or 2 or 3 correct)

Question		Working	Answer	Mark	Notes
16			18 | 9 9 19 | 0 3 5 8 20 | 0 5 6 7 7 21 | 1 2 8 22 | 3 Key	3	B2 for a correct ordered diagram (B1 for an unordered diagram with at most1 error or omission OR for an ordered diagram with 1 or 2 errors or omissions Note: 1 error can look like 2 in the diagram when 1 value is misplaced B1 (indep) for a correct key eg Key: 18| 7 represents 187 (g) NB for an ordered diagram of the form 1 | 89 89 90 93 95 98 2 | 00 05 06 07 07 11 12 18 23 award a maximum of B1 for an ordered diagram with 1 or 2 errors or omissions The B1 for a key can still be earned.

18	(a)		Yes with valid reason	1	C1 for Yes with it can be cancelled to 1 in 6 oe, eg 15 out of 90 is the same as 1 out of 6 or 90 ÷ 6 = 15 or No with as this survey only has 90 cats oe or Can't tell with we do not know how many cats in the survey
	(b)	Top Cat = 35 × 4 = 140° Katkins = 30 × 4 = 120° Coolkat = 15 × 4 = 60°	Pie chart	3	M1 for 360 ÷ 90 or 4 seen or one angle (TC or Ka or Co) correct in pie chart ± 2° ignore labels, or one correct angle calculated A1 for any two angles (TC or Ka or Co) correct in pie chart. ± 2° ignore labels A1 for fully correct and labelled pie chart. All angles ±2°

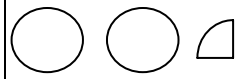
<table>
<tr><th colspan="5">5MB1F_01</th></tr>
<tr><th colspan="2">Question</th><th>Working</th><th>Answer</th><th>Mark</th><th>Notes</th></tr>
<tr><td>19*</td><td></td><td>A = (78 + 52 + 165) × 2 + 236
= 295 × 2 + 236 = 590 + 236
= 826

826 × 0.95 = 784.70

B = (68 + 48 + 160) × 2 + 242
= 276 × 2 + 242 = 552 + 242
=794
794 × 0.97 = 770.18

<table>
<tr><th>Shop</th><th>A</th><th>B</th></tr>
<tr><td>Skis</td><td>156</td><td>136</td></tr>
<tr><td>Boots</td><td>104</td><td>96</td></tr>
<tr><td>S & B</td><td>260</td><td>232</td></tr>
<tr><td>Lift(Ch)</td><td>330</td><td>320</td></tr>
<tr><td>Lift (Ad)</td><td>236</td><td>242</td></tr>
<tr><td>Lift total</td><td>566</td><td>562</td></tr>
<tr><td>Total</td><td>826</td><td>794</td></tr>
<tr><td>%age off</td><td>41.3</td><td>23.82</td></tr>
</table>
</td><td>Shop B</td><td>5</td><td>M1 for finding the total cost for 1adult and 2 children for lift passes for 6 days in either shop A or shop B
e.g 236 + 2 × 165 or 242 + 2 or 2× 160 or 236 + “330” or 242 + “320” or 566 seen or 562 seen
or the total cost of 2 children only for ski hire and boot hire for 6 days in either shop A or shop B
e.g. 2× 78 + 2 × 52 or 2× 68 + 2 × 48 or “156” + “104” or “136” + “96” or 260 seen or 232 seen

M1 for a complete calculation of cost for shop A or shop B
Eg (78 + 52 + 165) × 2 + 236 or (68 + 48 + 160) × 2 + 242 or “295” × 2 + 236 or “276” × 2 + 242 or 826 or 794 seen
M1 for a correct method to find the reduced cost for shop A or for shop B
e.g. “826” × 0.95 or “794” × 0.97
A1 for (€)784(.70) or (€)785 and (€)770(.18)
C1 (dep on M1 scored) ft for ‘cheaper shop’ identified</td></tr>
</table>

Question		Working	Answer	Mark	Notes
1	(a)		8	1	B1 cao
	(b)		11	1	B1 cao
	(c)		$2\frac{1}{4}$ circles	1	B1 for $2\frac{1}{4}$ circles oe

7	(a)		4	1	B1 cao
	(b)		13	1	B1 cao
	(c)		11 and 14	1	B1 cao
	(d)		4	2	M1 for 14–10 or 10 –14 or –4 or 10 to 14 or 14 to 10 A1 cao
	(e)	4 + 3 + 2 + 5 + 3	17	2	M1 for adding at least 4 correct heights out of 4 or 5 heights A1 cao

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*8	(a)		20 45	1	B1
	(b)	Example of figures for comparison 7min 30 sec with 7 min 28 secs 3 mins 43 secs with 3mins 45 secs 224 secs with 225 secs 3mins 44 secs with 3 mins 45 secs	No	3	M1 for doubling Seeta's time or halving Ninal's time or finding the difference between the two times Eg 3 min 45 sec × 2 or (7m 28s) ÷ 2 or 7m 28s-3min 45 secs M1 for a complete method to convert their time(s) to common units with the units stated C1 for No and **correct** figures compared (could be in secs or mins and secs)

17		<table><tr><th>Colour</th><th>Tally</th><th>Frequency</th></tr><tr><td>Red</td><td></td><td></td></tr><tr><td>Blue</td><td></td><td></td></tr><tr><td>Green</td><td></td><td></td></tr><tr><td>Silver</td><td></td><td></td></tr></table>	Data collection table	3	B3 for correct table with all three aspects without repeats Aspect 1: colour (of car) or for at least 3 of red, blue, green, other etc. Aspect 2: 'tally' or tally marks or 'frequency' or 'number of cars' Aspect 3: 'frequency' or 'total(s)' or 'number of cars' (B2 for two aspects) (B1 for one aspect)

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*18			35° with reasons	4	M1 for correct method to find one angle eg 70 or 110 (angles could be on the diagram) M1 for a complete correct method to work out x A1 (dep on M1) for 35° C1 for complete geometric reasons for their chosen method without extras eg exterior angle = sum of interior opposite angles **and** base angles of an isosceles triangle are equal OR angles in a triangle add up to 180 **and** angles on a straight line add up to 180 **and** base angles of an isosceles triangle are equal OR M1 $x + x + 20 + 90 = 180$ M1 for a complete correct method to work out x A1 (dep on M1) for 35° C1 for complete geometric reasons for their chosen method without extras eg angles in a triangle add up to 180 **and** base angles of an isosceles triangle are equal

1MA0_1F

Question		Working	Answer	Mark	Notes
1	(a)		6, 7, 4, 3	2	M1 for at least 2 correct frequencies or 2 correct tallies A1 for all frequencies correct (with or without the tally column completed or incorrectly completed)
	(b)		Bus	1	B1 ft from frequency column or from tally column if different to frequency

Question		Working	Answer	Mark	Notes
4	(a)		4	1	B1 cao
	(b)		5	1	B1 cao
	(c)			2	B1 cao for Match 6 B1 cao for Match 7

Question		Working	Answer	Mark	Notes
16		<table><tr><td></td><td>TT</td><td>D</td><td>S</td><td></td></tr><tr><td>B</td><td><u>7</u></td><td>12</td><td>4</td><td><u>23</u></td></tr><tr><td>G</td><td>4</td><td><u>8</u></td><td><u>5</u></td><td>17</td></tr><tr><td></td><td>11</td><td>20</td><td><u>9</u></td><td><u>40</u></td></tr></table>	11	4	M1 for a 2-way table or diagram showing at least 3 pieces of information correctly placed M1 17 girls or 4 boys with slalom skis M1 12 boys with downhill skis or 4 girls with twin tips A1 cao OR M1 for 40 – 23 (= 17) M1 for one part subtraction ie “17” – 8 or “17” – 5 M1 for (“17” – 8) – 5 or (“17” – 5) – 8 A1 cao

Original question 4

The full source mark scheme begins on page 352. Use the original paper code, tier and question number shown above.

Original question 8

The full source mark scheme begins on page 352. Use the original paper code, tier and question number shown above.

Original question 13

The full source mark scheme begins on page 352. Use the original paper code, tier and question number shown above.

Original question 15

The full source mark scheme begins on page 352. Use the original paper code, tier and question number shown above.

Original question 19

The full source mark scheme begins on page 352. Use the original paper code, tier and question number shown above.

2	(a)		12	1	B1 cao
	(b)		9	2	M1 for complete method to find total number of white bread sandwiches **or** 28 **or** total number of brown bread sandwiches **or** 19 A1 cao **OR** M1 for method to find difference between white and brown ham **or** ±1 **or** white and brown egg **or** ±8 (may result in positive or negative number) A1 cao

Question		Working	Answer	Mark	Notes
24		<table><tr><td></td><td>M</td><td>F</td><td>T</td></tr><tr><td>Train</td><td>5</td><td><u>10</u></td><td>15</td></tr><tr><td>Car</td><td><u>8</u></td><td>17</td><td>25</td></tr><tr><td>Total</td><td><u>13</u></td><td>27</td><td><u>40</u></td></tr></table>	25	3	**NB : There is often a choice of methods seen in responses to this question. When this occurs, the guidance given in point 7 of the marking principles must be followed - mark the method that leads to the answer** M1 for 40 – 13 **or** 27 female **or** 40 – (13+10) **or** 13 – 8 **or** 5 males and train M1 for a complete correct method eg. "27" – 10 + 8 **or** 40 – (10 + "5") A1 for 25 **OR** M1 for a 2-way table or diagram, with clear labeling showing at least 3 pieces of the given information correctly placed. M1 for 27 female or 5 male and train A1 cao (Note for award of the final A1, the 25 in the diagram must be highlighted in some way to indicate it is the final answer (or placed on the answer line))
*25 QWC			$x = 50^o$ with complete reasons	3	M1 for 180 – (65 + 65) A1 for $x = 50$ cao C1 (dep on M1) Base <u>angles</u> of an <u>isosceles</u> triangle are <u>equal</u> **and** <u>angles</u> in a <u>triangle</u> add up to <u>180</u>

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
26	(a)	(4,0) (3, 0) (3, -1) (2, -1) (2, 2) (4, 2)	Correct position	2	B2 for correct shape in correct position (B1 for any incorrect translation of correct shape)
	(b)		Rotation 180° (0,1)	3	B1 for rotation B1 for 180° (ignore direction) B1 for (0, 1) **OR** B1 for enlargement B1 for scale factor −1 B1 for (0, 1) (NB: a combination of transformations gets B0)

PAPER: 1MA0_1F					
Question		Working	Answer	Mark	Notes
27			24	4	M1 for 0.15 × 240 oe (= 36) M1 for $\frac{3}{4}$ × 240 oe (= 180) M1 (dep on both prev M1) for 240 – "180" – "36" A1 cao **OR** M1 for 15(%) + 75(%) (= 90(%)) M1 for 100(%) – "90"(%) (= 10(%)) M1 (dep on both prev M1) for "$\frac{10}{100}$" × 240 oe A1 cao **OR** M1 for 0.15 + 0.75 oe(= 0.9) M1 for "0.9" × 240 oe (= 216) M1 (dep on both prev M1) for 240 – "216" A1 cao **OR** M1 for 0.15 + 0.75 oe(= 0.9) M1 for 1 – "0.9" oe (= 0.1) M1 (dep on both prev M1) for "0.1" × 240 = 24 A1 cao

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
28			1.5	4	M1 for correct expression for perimeter eg. $4 + 3x + x + 6 + 4 + 3x + x + 6$ oe M1 for forming correct equation eg. $4 + 3x + x + 6 + 4 + 3x + x + 6 = 32$ oe M1 for $8x = 12$ **or** $12 \div 8$ A1 for 1.5 oe **OR** M1 for correct expression for semi-perimeter eg. $4 + 3x + x + 6$ oe M1 for forming correct equation eg. $4 + 3x + x + 6 = 16$ M1 for $4x = 6$ **or** $6 \div 4$ A1 for 1.5 oe

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
29		x – 2 -1 0 1 2 3 4 y 4 4.5 5 5.5 6 6.5 7	$y = ½ x + 5$ drawn	3	**(Table of values / calculation of values)** M1 for at least 2 correct attempts to find points by substituting values of x. M1 ft for plotting at least 2 of their points (any points plotted from their table must be plotted correctly) A1 for correct line between $x = −2$ and $x = 4$ **(No table of values)** M1 for at least 2 correct points with no more than 2 incorrect points M1 for at least 2 correct points (and no incorrect points) plotted **OR** line segment of $y = ½ x + 5$ drawn A1 for correct line between $x = −2$ and $x = 4$ **(Use of y=mx+c)** M1 for line drawn with gradient of 0.5 **OR** line drawn with a y intercept of 5 M1 for line drawn with gradient of 0.5 **AND** with a y intercept of 5 A1 for correct line between $x = −2$ and $x = 4$ SC : B2 for the correct line from $x = 0$ to $x = 4$

Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5°
Measurements of length: ±5 mm

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
1	(b)	Angle x = 115 degrees.	Angle x is 115° ±5°
	(c)		10.5 ±5 mm
3		6 caravans changed to 5	Standard mark scheme
6		Hampton in Arden row has been removed.	Standard mark scheme
8	(a)	2cm grid – wording changed to "a grid of squares". Each square represents a one centimetre square."	Standard mark scheme
	(b)	2cm grid – wording added "Each square represents a one centimetre square."	Standard mark scheme
9	(ii)	(X) removed.	Standard mark scheme
11		Boxes removed. Information given instead.	Standard mark scheme
13		Pictures of coins was removed.	Standard mark scheme

Question		Modification	Notes
15		Braille only – roman numerals (i) to (iii) given as 0.5 (i) 2 15 3 (ii) (iii) 33	Standard mark scheme
21	(c)	Size of diagram ×2 – grey tiles changed to dotty shaded. One shape given for MLP and six shapes given for Braille and TLP	Standard mark scheme Standard mark scheme
22	(c)	Grid – *y* axis- 3cm for 1; *x* axis 3cm for 5. Tuesday graph goes from (0,0) to (20,3).	Tuesday graph altered. Answer now 10 minutes M1 for '30' – '20' seen with at least one correct (SC : B1 for 25 **and** 20 seen with an answer of 5)
23	(a)	MLP – *x* changed to *y*	Standard mark scheme
25		Braille – diagram labelled A B C and additional information was given about the diagram.	Standard mark scheme
26	(a)	2cm grid – shape P moved up two squares.	**P** is in a different starting position - mark scheme remains the same B2 for correct shape in correct position (B1 for any incorrect translation of correct shape)
	(b)	No shading of shapes – *x* axis -2 and -4 removed as they would obscure shape.	Standard mark scheme
28		MLP and Braille – *x* changed to *y*	Standard mark scheme
29		1.5 cm grid	Standard mark scheme

Question		Working	Answer	Mark	Notes
5			$\frac{40}{200}$	3	**(uses frequencies)** M1 for 40 or 200 or any correct day total M1 for $\frac{40}{T}$, $T > 40$ or $\frac{n}{200}$, $n < 200$ A1 for $\frac{40}{200}$ oe accept 20% OR **(uses boxes)** M1 for 2 or 10 M1 for $\frac{2}{T}$, $T > 2$ or $\frac{n}{10}$, $n < 10$ A1 for $\frac{2}{10}$ oe accept 20% OR **(uses rectangles)** M1 for 8 or 40 M1 for $\frac{8}{T}$, $T > 8$ or $\frac{n}{40}$, $n < 40$ A1 for $\frac{8}{40}$ oe accept 20% [SC B2 for 40 out of 200 oe]

Original question 10

The full source mark scheme begins on page 372. Use the original paper code, tier and question number shown above.

15			<table><tr><td>coin</td><td>tally</td><td>freq</td></tr><tr><td>£1</td><td>lll</td><td>3</td></tr><tr><td>50p</td><td></td><td>(0)</td></tr><tr><td>20p</td><td>~~llll~~1</td><td>6</td></tr><tr><td>10p</td><td>lll</td><td>3</td></tr><tr><td>5p</td><td>ll</td><td>2</td></tr><tr><td>2p</td><td></td><td>(0)</td></tr><tr><td>1p</td><td>ll</td><td>2</td></tr></table>	2	B2 for all frequencies correct condone missing 0s (B1 for at least 3 correct non zero frequencies or at least 3 correct non zero tallies or at least 2 correct non zero tallies with their frequencies correct)

PAPER: 1MA0_2F

18			11	3	M1 for $52 \times \frac{3}{4}$ (=39) oe or $\frac{120}{360} \times 150$ (=50) oe M1 for $52 \times \frac{3}{4}$ (=39) oe and $\frac{120}{360} \times 150$ (=50) oe A1 cao

PAPER: 1MA0_2F

4	(a)(i)		20	2	B1 cao
	(ii)		45		B1 cao
	(b)	10+20+40+45+75+80+40 **Or** 14 × 20 + 10 +5 + 15	310	2	M1 for attempt to find the total by adding individual days ft from (a) or 14 × 20 A1 ft from their readings in (a)

PAPER: 5MB1F_01

Original question 7

The full source mark scheme begins on page 392. Use the original paper code, tier and question number shown above.

Question		Working	Answer	Mark	Notes
11			Suitable data collection sheet	3	B1 for data grouped in intervals that are not overlapping B1 for tally column or frequency columns labelled B1 for suitable data collection sheet appropriate to the task e.g. with exactly 3 columns and which are correctly labelled NB do not accept questionnaires or graphs

12	(a)(i)		46-50	2	B1 for 46 – 50
	(ii)		$\frac{48}{360}$		B1 ft from their part (i) for their $\frac{48}{360}$, $\frac{8}{60}$, $\frac{2}{15}$ oe; do not accept decimals.
	(b)		23	3	M1 ft for 360 – (90 + "48" +" 84") [=136-140] M1 ft for 360 ÷ 60 = 6° or "138" ÷ 6 A1 cao **Or** M1 ft for 360 – (90 + "48" + "84") [=136-140] M1ft for using their 138 in $\frac{138}{360} \times 60$ (=22.5 – 23.5) A1 cao

Question		Working	Answer	Mark	Notes
14	(a)		68	1	B1 cao
	(b)		37	1	B1 cao
	(c)		41	2	M1 for an attempt to find the middle number or circling the 1 in the diagram or writing 1 or 4|1 A1 cao

Question		Working	Answer	Mark	Notes
16			Points plotted at (5, 6), (15, 9), (25, 8), (35, 7), (45,5) and joined with line segments	2	B2 for correct plotting of 5 points and joining with line segments (B1 for points plotted correctly at midpoints of intervals OR joining points with line segments at the correct heights and consistent within the class interval (including end values) OR correct frequency polygon with one point incorrect OR correct frequency polygon with first and last point joined) NB Ignore any histogram drawn and any part of frequency polygon outside range of first and last points plotted

17			29	4	M1 for complete correct method to find the total number of girls eg 120 – 30 (=90) M1 for a complete correct method to find the number of girls who play Football and hockey eg 26 + 35 (=61) M1 for "90" – "61" A1 for identifying 29 as the answer **OR** M1 for a complete correct method to find the total number playing tennis M1 for a complete correct method to find the number of boys playing tennis M1 for "total for tennis" "boys playing tennis" A1 for identifying 29 as the answer

Example diagram for Question 11:

Heights	Tally	Freq
$120 \leq h < 130$ $130 \leq h < 140$ $140 \leq h < 150$ $150 \leq h < 160$ etc		

Example diagram for Question 11:

Heights	Tally	Freq
120 - 129 130 - 139 140 - 149 150 - 159 etc		

Question 17 possible 2-way table:

	B	G	Tot
F	**10**	35	**45**
H	12	26	**38**
T	**8**	**29**	**37**
Tot	30	**90**	120

Question 17 possible 2-way table:

	F	H	T	Tot
B	**10**	12	**8**	30
G	35	26	**29**	**90**
Tot	**45**	**38**	**37**	120

Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5º
Measurements of length: ±5 mm

PAPER: 5MB1F_01			
Question		**Modification**	**Notes**
1		Just number given-no cards-wording	Standard mark scheme
4		Boxes in diagram –enlarged	Standard mark scheme
7		10.5 cm grid.	Standard mark scheme
9		Table moved around so that fridges are together with freezers underneath	Standard mark scheme
12	(a)(i) (a)(ii) (b)	Angles for Thai is 60degrees .Angle for Chinese is 150degrees	B1 for 58 – 62 B1 ft from their part (i) for their $\frac{60}{360}$ oe; do not accept decimals M1 ft for subtraction from 360° [=148-152] M1 ft for 360 ÷ 60 = 6º or "150" ÷ 6 A1 cao **Or** M1 ft for subtraction from 360° [=148-152] M1ft for using their 150 in $\frac{150}{360}\times 60$ A1 cao

PAPER: 5MB1F_01			
Question		**Modification**	**Notes**
14		Stem and leaf diagram: horizontal lines inserted	Standard mark scheme
16		x-axis 2cm for 5. *y*- axis 2cm for 1	Standard mark scheme

2	(a)		8	1	B1 cao
	(b)		10	1	B1 cao
	(c)		$1\frac{3}{4}$ circles	1	B1 cao

20			Tally chart	3	B3 for a **table** with all 3 aspects: Column/row heading 'months **or** list of at least 3 months Column/row heading 'tally' or tally marks Column/row heading 'frequency' or totals oe (B2 for a table with 2 of the 3 aspects) (B1 for a table with 1 of the 3 aspects)

Original question 8

The full source mark scheme begins on page 408. Use the original paper code, tier and question number shown above.

26		19	4	M1 for 130 − 96 (=34) M1 for 73 − 55 (=18) M1 for“34” − 9 – “18” + 12 A1cao **OR** M1 for. 96 − 55 − 12 (=29) M1 for 9 + “29” (=38) M1 for 130 − 73 – “38” A1 cao

Original question 1

The full source mark scheme begins on page 425. Use the original paper code, tier and question number shown above.

Original question 5

The full source mark scheme begins on page 425. Use the original paper code, tier and question number shown above.

Original question 8

The full source mark scheme begins on page 425. Use the original paper code, tier and question number shown above.

Original question 10

The full source mark scheme begins on page 425. Use the original paper code, tier and question number shown above.

3			55	3	M1 for 29 + 17 + 19 (=65) or 34 + 43 + 43 (=120) M1 for “120” – “65” A1 cao OR M1 for 34 – 29 (=5) or 43 – 17 (=26) or 43 – 19 (=24) M1 for “5” + “26” + “24” A1 cao OR M1 for three other consistent differences found M1 adding their differences A1 cao

PAPER: 1MA0_1F

Original question 9

The full source mark scheme begins on page 437. Use the original paper code, tier and question number shown above.

17			168, 72, 120	4	M1 for evidence of method for at least one angle (could be implied by working or one correct angle on pie chart or in table) A2 for all angles drawn correctly ±2° (A1 for at least one angle drawn correctly or all angles correct in table) B1 for sectors labelled with results (dependent on at least one angle drawn correctly and exactly three sectors)

PAPER: 1MA0_1F

20		<table><tr><td></td><td>Sq</td><td>G</td><td>S</td><td>Tot</td></tr><tr><td>F</td><td>2</td><td>4</td><td>15</td><td>21</td></tr><tr><td>M</td><td>6</td><td>14</td><td>9</td><td>29</td></tr><tr><td>Tot</td><td>8</td><td>18</td><td>24</td><td>50</td></tr></table>	4	4	M1 for a correct first step which results in a value that could be in the table: eg. 50 – 18 – 8 (= 24) or 50 – 21 (= 29) or 8 – 6 (= 2) M1 for correct method to find a second value that could be in the table using their first value eg “29”-9-6 (=14) or “24”-9 (=15) M1 for a fully correct and complete method. A1 cao

PAPER: 1MA0_2F

Question		Working	Answer	Mark	Notes
1	(a)		French	1	B1 cao
	(b)		Ella	1	B1 cao
	(c)		Penny	1	B1 cao

PAPER: 1MA0_2F

Question		Working	Answer	Mark	Notes
19			Data collection sheet	3	B1 for labels (e.g. transport type) or transport types listed (minimum 2) B1 for tallies or tallies shown in table B1 for frequency (or total) o.e. **NB do not accept questionnaires or graphical approaches**

Paper_5MB1F_01

Question		Working	Answer	Mark	Notes
1	(a)		10	1	B1 cao
	(b)		7	1	B1 cao
	(c)		Two circles	2	B1 for 2 circles for Thursday
			4 whole circles 1 half circle		B1 for 4 whole circles and 1 half circle for Friday oe

7	(a)		Correct frequencies: 4,9,6,3	2	B2 for all frequencies correct (B1 for 2 tallies or 2 frequencies correct)
	(b)		Swimming or 9	1	B1 ft from frequencies or tallies in (a) or diagram in (c)
	(c)		Diagram or chart	3	B1 for labelling horizontal axis with activities B1 for linear scale labelled frequency oe B1 for accurately representing the data ft from their frequencies or tallies in (a)
*8			Yes and reason	2	M1 for a line drawn up from 50 or across from 80 or reading 55 or 74 C1 (dep on M1) for statement including yes and a correct reading eg 55, 74 or £6 less”

Paper 5MB1F 01

Paper_5MB1F_01

Question		Working	Answer	Mark	Notes
11	(a)		No and comparison	2	M1 for writing a fraction of 360 eg $\frac{40}{360}$ or $\frac{36}{360}$ OR $\frac{1}{9}$ or $\frac{1}{10}$ or decimals 0.11 or 0.1 or percentages 11.1% or 10% (% needed) A1 for No and $\frac{40}{360} > \frac{36}{360}$ oe OR M1 for $\frac{10}{100} \times 360$ (= 36) A1 for No with 36
	(b)		75	3	M1 for 360 – (70 + 40 + 150) (= 100) M1 for 150 ÷ ("100" ÷ 50) oe A1 cao

12	(a)		(17) 9 (14) 12 (13) 7 (29) 22 (21)	2	B2 for all 4 correct entries (B1 for 2 or 3 correct entries)
	(b)		$\frac{40}{72}$	1	$\frac{40}{72}$ B1 for $\frac{40}{72}$ oe
	(c)		$\frac{13}{32}$	1	$\frac{13}{32}$ B1 for $\frac{13}{32}$ oe

Paper_5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*13			4	4	M1 for 200 ÷ (1 + 9) (= 20) M1 for 750 ÷ 20 (= 37.5) A1 for 3.7(3….) or $3\frac{11}{15}$ or 2800 **and** 3000 C1 ft (dep on M1) for clear statement of 4 bottles with working shown **OR** M1 for 750 × 10 (= 7500) M1 for 200 × 140 (= 28 000) A1 for 3.7(3….) or $3\frac{11}{15}$ or 2800 **and** 3000 C1 ft (dep on M1) for clear statement of 4 bottles with working shown **OR** M1 for 200 × 140 (= 28 000) M1 for 28 000 ÷ (9 + 1) (= 2800) A1 for 3.7(3….) or $3\frac{11}{15}$ or 2800 **and** 3000 C1 ft (dep on M1) for clear statement of 4 bottles with working shown **OR** M1 for 200 ÷ (1 + 9) (= 20) M1 for 140 × "20" (= 2800) A1 for 3.7(3….) or $3\frac{11}{15}$ or 2800 **and** 3000 C1 ft (dep on M1) for clear statement of 4 bottles with working shown

Paper 5MB1F 01

6	(a)		April	1	B1 cao
	(b)		June and August	1	B1 cao
	(c)		8	2	M1 for 14 – 6 or 6 – 14 A1 cao

Question		Modification	Notes
1		Key top left. Pictures size x 2½	

5		Table: Friday row removed, Saturday – 17 changed to 12 Grid: Vertical axis – 15 x 2 cm squares, horizontal axis 10 x 2 cm squares Room left for labelling on the left and below.	

Question		Modification	Notes
12		Braille: (i) is put in total women and (ii) in train total	

16		Diagram enlarged. 4th horizontal line drawn in at the bottom.	

4			28	3	M1 for 38 + 55 + 41 (= 134) or 54 + 43 + 65 (= 162) M1 for “162” – “134” A1 cao OR M1 for 54 – 38 (= 16) or 55 – 43 (= 12) or 65 – 41 (= 24) M1 for “16” – “12” + “24” A1 cao

PAPER: 5MB2F_01

Original question 1

The full source mark scheme begins on page 456. Use the original paper code, tier and question number shown above.

Original question 2

The full source mark scheme begins on page 456. Use the original paper code, tier and question number shown above.

Original question 15

The full source mark scheme begins on page 456. Use the original paper code, tier and question number shown above.

Original question 20

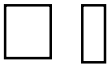
The full source mark scheme begins on page 456. Use the original paper code, tier and question number shown above.

2	(a)		5	1	B1 cao
	(b)		Saturday	1	B1 cao
	(c)	4+6+5+2+4+7+6 = 34 5+3+4+3+4+6+3 = 28 34 – 28 -1 + 3 + 1 + -1 + 0 + 1 + 3	6	2	M1 for intention to find the total hours for Skegness or for Blackpool. A1 cao OR M1 for intention to find differences for each day. A1 cao

5	(a)		winter	1	B1 cao
	(b)		amaryllis	1	B1 cao
	(c)(i)		Mark at 0	2	B1 for mark at 0
	(ii)		Mark at $\frac{1}{2}$		B1 for mark at $\frac{1}{2}$

11		06 57 06 57 07 19 07 19 07 10 07 10 07 33 07 33 07 45 07 58 07 45 07 58 08 50 09 27 08 50 09 27 0920 09 57 09 20 09 57	Fully correct schedule	3	B1 for 06 57 or 07 19 with correct arrival time in Peterborough **or** for 07 45 or 07 58 with associated arrival time in York B1 for fully correct departure times and arrival times for 2 train journeys that enable travel from Stamford to York to arrive by 0930 B1 ft for arrival time at meeting 30 mins after York arrival

17	(a)		**14** 13 **20** 47 **12** **7** 34 **53** 26 20 **54** 100	3	B3 for fully correct table (B2 for 3 or 4 or 5 correct entries) (B1 for 1 or 2 correct entries)
	(b)		$\frac{13}{47}$	2	M1 for $\frac{13}{n}$, $n > 13$ or for $\frac{n}{47}$, $n < 47$ A1 for $\frac{13}{47}$ (or 0.27 - 0.28 or 27% - 28%)

Question		Working	Answer	Mark	Notes
1	(a)			1	B1 for 6 TVs drawn for Sunday
	(b)		37	2	M1 for attempt to find the total for 4 days (eg 8+10+13+6) by adding individual days with at least 3 days correct A1 cao

Question		Working	Answer	Mark	Notes
19	(a)		16	2	M1 for 360 ÷ 45 oe or 2 × 8 or Roach identified as 6 or Bream identified as 8 A1 cao
	(b)		No	1	B1 for 'No' and correct explanation, e.g. the pie charts only show that the proportions OR explains that she could be correct if the total number of fish is the same in each chart OR explains that we don't know if she is correct because the total number of fish is not known.

Original question 4

The full source mark scheme begins on page 472. Use the original paper code, tier and question number shown above.

11	(a)		300	1	B1 cao
	(b)		100	3	M1 for intention to find the total number of adults or the total number of children M1(dep) for subtracting the two totals A1 for answer in range 90 to 110 OR M1 for intention to find the difference between the number of adults and the number of children for two months M1 (dep) for correctly processing all the differences A1 for answer in range 90 to 110

PAPER: 1MA0_2F					
Question		Working	Answer	Mark	Notes
*12			£52.74 or 5274p	4	M1 for subtracting to find the units used (= 293) M1 for '293' × 18 or '293' × 0.18 A1 for 52.74 or 5274 C1 (dep M2) for identifying their answer with the correct monetary units OR M1 for 2968 × 18 (= 53424) or 2675 × 18 (= 48150) or 2968 × 0.18 (= 534.24) or 2675 × 0.18 (= 481.50) M1 for subtracting their two costs (consistent in pence or pounds) A1 for 52.74 or 5274 C1 (dep M2) for identifying their answer with the correct monetary units

16			Suitable data collection sheet	3	B3 for a table with all 3 aspects: column/row heading ‘colour’ or list of at least three colours column/row heading ‘tally’ or tally marks column/row heading ‘frequency’ or totals oe (B2 for a table with 2 of the 3 aspects) (B1 for a table with 1 of the 3 aspects) NB: Do not accept questionnaires or graphs

PAPER: 1MA0_2F

2	(a)	6, 2 8, 4	Frequency table	2	M1 for 3 tallies or frequencies correct A1 for all frequencies correct
	(b)		Correct chart	3	M1 Bar Chart (or stick graph) with at least 3 bars (sticks) A1 ft their frequencies for 4 bars (sticks) correct heights (ft) A1 fully labelled **Or** M1 Pictogram or pie chart with at least 3 rows showing A1 ft their frequencies for 4 rows or sectors correct (ft) A1 labels and key
	(c)		Clover	1	B1 ft table or chart

6	(a)		30	1	B1 cao
	(b)		15	1	B1 cao
	(c)		4 'jars' in Week 4	1	B1 cao
	(d)		5	1	B1 cao

7	(a)		Sleep	1	B1cao
	(b)		1/4	1	B1 oe
	(c)		3	2	M1 for a complete method e.g. 360 ÷ 45 and 24 ÷ '8' or 24 ÷ 8 or 24 ÷ 4 ÷ 2 or 24 ÷ 360 × 45 A1 cao

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9	<table><tr><th></th><th>A</th><th>D</th><th>M</th><th>T</th></tr><tr><td>G</td><td>8</td><td>9</td><td>13</td><td>30</td></tr><tr><td>B</td><td>0</td><td>9</td><td>2</td><td>11</td></tr><tr><td>T</td><td>8</td><td>18</td><td>15</td><td>41</td></tr></table>	Correct Table	3	B3 for fully correct table (B2 for at least 7 of their entries correct) (B1 for at least 4 of their entries correct)

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1MA0 1F November 2015

Question		Working	Answer	Mark	Notes
1	(a)		Charlie	1	B1 cao
	(b)		8	1	B1 cao
	(c)		11	1	B1 cao
	(d)		2 ½ circles drawn	1	B1 for 2 ½ circles drawn oe

2	(a)		26	3	M1 for 25−13+20 (=32) or 20−13 (=7) M1 for 58−"32" or 58−25−"7" A1 cao
	(b)		6	3	M1 for adding week 1 or week 2, eg 12+ … +13 (=64) or 16+ … +9 (=70) M1 for "70" – "64" (=6) A1 cao **OR** M1 for finding differences for each day, eg 16−12 (=±4), 20−12 (=±8), etc oe M1 for adding differences using consistent signs, eg 4+8−4+2−4 (=6) oe or −4−8+4−2+4 (=−6) oe A1 cao

1MA0 1F November 2015

1MA0 1F November 2015

Question		Working	Answer	Mark	Notes
22		2p 1p ½ p Tot Sat 7 16 (31) 54 Sun (15) 14 17 (46) Tot (22)(30) 48 (100)	14	4	M1 for (total Sat bottles) 100 – 46 (=54) or (total ½ pint bottles) 100 – 22 – 30 (=48) or (total 2 pint bottles on Sat) 22 – 15 (=7) M1 for (total Sun bottles of ½ pint) "48" – 31 (=17) or (total Sat bottles of 1 pint: "54" – 31 – "7" (=16) M1 for 46 – 15 – "17" (=14) or 30 – "16" (=14) A1 cao NB any of the above figures could be shown in a 2-way table
23*			NO with evidence	4	M1 for 50 × 40 × 30 (=60 000) M1 for "60 000" ÷ 3000 (=20) M1 for "20" × £3.50 C1 for (£)70 and comparison resulting in NO **OR** M1 for 60 ÷ 3.50 (=17 bottles) M1 for "17" × 3000 (=51,000) M1 for 50 × 40 × 30 (=60,000) C1 for 51,000 and 60,000 and comparison resulting in NO

Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5°
Measurements of length: ±5 mm

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
Q01		Pictogram is enlarged. Key moved to top left. Vertical line put on each circle in the centre.	
Q04	(c)	Diagram is enlarged Grid is enlarged.	
Q07	(d) (e)	The five shapes are enlarged. Set of shapes provided for braille, tactiles and 36 pt. Diagram is enlarged. Diagram is enlarged	
Q10	(c)	MLP only: x and y changed to g and h.	
Q11		Grid is enlarged. Wording added “mirror line” above mirror line. Dotty shading. Shape provided for braille, tactiles and 36 pt. Line 1: “centimetre” is removed. Inserted into text and on diagram “Each square on the grid represents a one centimetre square.”	

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
Q13	(a)	Diagram is enlarged. MLP: x changed to y. (b) Diagram is enlarged.	
Q14	(a) (b)	Graph is enlarged. Right axis labelled 18 changed to 15 13 changed to 10.	
Q15		Diagram is enlarged .M changed to metres where it will fit.	
Q16	(b)	Grid is enlarged. Dotty shading. 6 shapes changed to 5 shapes. Cut out shape is provided.	
Q20		Diagram is enlarged.	
Q23		Model provided for all candidates. Diagram also provided for MLP. Diagram is enlarged.	

Original question 6

The full source mark scheme begins on page 488. Use the original paper code, tier and question number shown above.

16			Data collection sheet	3	B3 for a **table** with all 3 aspects: column/row heading 'sport' or list of at least 3 sports column/row heading 'tally' or tally marks (or key) column/row heading 'frequency' or totals oe (B2 for a table with 2 of the 3 aspects) (B1 for a table with 1 of the 3 aspects) NB: 0 marks for questionnaires and graphs

PAPER: 1MA0_2F

Original question 1

The full source mark scheme begins on page 505. Use the original paper code, tier and question number shown above.

Original question 2

The full source mark scheme begins on page 505. Use the original paper code, tier and question number shown above.

Original question 5

The full source mark scheme begins on page 505. Use the original paper code, tier and question number shown above.

Original question 9

The full source mark scheme begins on page 505. Use the original paper code, tier and question number shown above.

Original question 13

The full source mark scheme begins on page 505. Use the original paper code, tier and question number shown above.

Original question 16

The full source mark scheme begins on page 505. Use the original paper code, tier and question number shown above.

PAPER: 1MA0/1F

Question		Working	Answer	Mark	Notes
1	(a)		February	1	B1 cao
	(b)		Onions	1	B1 cao
	(c)		Lettuces	1	B1 cao

15			Data collection sheet	3	B1 for a fruit type column. B1 for tally column. B1 for frequency column.

18	(a)		$\frac{120}{360}$	2	M1 for 360 – 45 – 105 – 90 (= 120) oe A1 for $\frac{120}{360}$ oe OR M1 for measuring angle as 118 – 122 A1 ft for $\frac{"120"}{360}$ oe
	(b)		18000	2	M1 for 4500 × 4 oe A1 cao

PAPER: 1MA0/1F

2	(a)		8	1	B1 cao
	(b)		Tuesday, Thursday	2	M1 for method to find total number of apples sold eg 4 + 6 + 8 + 9 + 3 (=30) A1 cao

17	**34** 44 78 42 **28** 70 76 **72** **148**	Complete table	3	B3 all correct (B2 for 5, 6, 7 or 8 correct) (B1 for any 2 of the 4 given correctly placed)

20	(a)		32.5	2	M1 for median value is 10.5^{th} evidenced by 10th and 11th seen or "31, 34" written or (31 + 34) ÷ 2 (condone missing brackets) or both 31 and 34 identified in the stem and leaf diagram or in a fully ordered list A1 for 32.5 (accept $32\frac{1}{2}$)
	(b)		32	2	M1 for 47 – 15 or 15 – 47 A1 cao
	(c)		7	1	B1 cao

PAPER: 1MA0_2F

24		Polygon drawn	2	B2 for correct frequency polygon (B1 for points plotted at correct midpoints of intervals or joining points at correct heights consistently within intervals including plotting at end values or correct frequency polygon with one point incorrect or correct frequency polygon with first and last points joined directly) NB ignore any histogram drawn and any part of frequency polygon outside range of first and last points plotted

PAPER: 1MA0_2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
*25		124° with reasons	4	M1 for a method to find any angle eg. angle *DEF* = 180 – 70 – 54 (= 56) or angle *AEB* = 70 or angle *EAB* = 54 or angle GEB = 180 – 70 (= 110) A1 for *x* =124 NB: Angles may be shown on the diagram C2 for full reasons, appropriate to their given method, with no additional reasons (C1 for one appropriate reason relating to parallel lines) Possible reasons: corresponding angles are equal; alternate angles are equal co-interior (allied)angles add up to 180; angles on a straight line add up to 180; angles in a triangle add up to 180 vertically opposite angles are equal; the exterior angle of a triangle is equal to the sum of the interior opposite angles; angles at a point add up to 360;

PAPER: 1MA0_2F

2	(a)		11	1	B1 cao
	(b)		49	2	M1 for 10 + 16 + "11" + 12 or ft "11" from (a) or for 11 × 4 + 2 + 3 A1 cao

PAPER: 5MB1F/01

Question		Working	Answer	Mark	Notes
6	(a)		5, 1, 4, 8	2	M1 for at least 2 correct frequencies or 2 correct tallies A1 for all frequencies correct (ignore tally column)
	(b)		dog	1	B1 ft from frequency column or from tally if different to frequency. Accept 8

10	(a)		8000	1	B1 (accept 8 thousand or 8)
	(b)		4000	1	B1 cao

PAPER: 5MB1F/01

PAPER: 5MB1F/01

Question		Working	Answer	Mark	Notes
11	(a)		46	1	B1 cao
	(b)		35.5	2	M1 for identifying 35 and 36 or for 5 and 6 or for 5.5 A1 for 35.5
	(c)		5	1	B1 cao

12	(a)		$\frac{1}{4}$	1	B1 for $\frac{1}{4}$ oe, eg $\frac{90}{360}$
	(b)		19	3	M1 for method to find the angle for 15 years (= 95), if measured accept 93 – 97 M1 for correct method to find degrees per person 115 ÷ 23 (= 5) or people per degree 23 ÷ 115 ($=\frac{1}{5}$) A1 cao

15			F	B	D		Completed table	3	B3 for fully correct table (B2 for 4 or 5 correct entries) (B1 for 2 or 3 correct entries)
		T	8	**11**	25	44			
		C	**12**	17	**7**	**36**			
			20	**28**	32	80			

Question	Working	Answer	Mark	Notes
1 (a)			1	B1 for 4 people unambiguously drawn for Cricket
(b)		27	2	M1 ft from their pictogram for 4 + 6 + 9 + 8 or 2 × (2 + 3 + 4.5 + 4) A1 cao

13	(a)		9.4	1	B1 cao
	*(b)		Diagram or chart	4	B1 for a key, or suitable labels, to identify regular yoghurt and low fat yoghurt. B1 for diagram(s) or chart(s) set up for comparison, showing data for protein, carbohydrate and fat, e.g. dual bar chart, line graph, etc B1 for correct heights for regular yoghurt **or** low fat yoghurt, dependent on a linear scale C1 for a fully correct diagram or chart to include labels for protein, carbohydrate and fat and vertical axis correctly scaled and labelled

15		Data collection table	3	Table with columns: B1 for column with 'method of travel' oe or at least 3 examples B1 for column with 'tally' or tally marks B1 for column with 'frequency' or 'number of people' **NB** Do not accept questionnaires or attempts at graphs.

PAPER: 1MA0/1F

Question	Working	Answer	Mark	Notes
22 (a)		$50 < a \leq 60$	1	B1 for correctly identifying the modal class interval e.g. 50 – 60 oe
(b)		Polygon	2	B2 for fully correct frequency polygon - points plotted at the midpoint (B1 for all points plotted accurately but not joined with straight line segments **or** all points plotted accurately and joined with last joined to first to make a polygon **or** all points at the correct heights and consistently within or at the ends of the intervals **and** joined (can include joining last to first to make a polygon) **NB**: ignore parts of graph drawn to the left of the 1st point or the right of the last point; ignore any histograms drawn.

2	(a)		white	1	B1 cao
	(b)		Sunflower	1	B1 cao
	(c)		Poppy	1	B1 cao

8		36	1	B1 cao for Cazda
		120°	1	B1 cao for Zusuki
		42	2	M1 for correct method from using 105° eg 18÷45×105, "36"÷90×105 or from table eg Cazda "36"×4−(18+36+48) A1 for 42 or ft values from their table.

PAPER: 1MA0/2F

Question		Working	Answer	Mark	Notes
1	(a)		10p	1	B1 cao
	(b)		5p	1	B1 cao
	(c)		30	1	B1 cao

3	(ai)		36	2	B1 cao
	(aii)		30		B1 cao
	(b)		2 hexagons 1 hexagon and 1 triangle	2	B1 for 2 hexagons (each divided into 6 triangles) B1 for 1 hexagon (divided into 6 triangles) and 1 triangle

Question		Working	Answer	Mark	Notes
9	(a)		Data collection sheet	3	B1 for lemonade and cola and orange (squash) B1 for tallies B1 for frequency or total oe
	(b)		4.32	4	M1 for cost of 2 bottles of orange and 3 bottles of lemonade M1 for finding $\frac{1}{5}$ of a cost M1 (dep on M2) for correct method to find change A1 cao

11		<table><tr><td></td><td>Friday</td><td>Saturday</td><td>Sunday</td><td>Total</td></tr><tr><td>Morning</td><td>27</td><td>34</td><td>51</td><td>112</td></tr><tr><td>Afternoon</td><td>38</td><td>52</td><td>63</td><td>153</td></tr><tr><td>Total</td><td>65</td><td>86</td><td>114</td><td>265</td></tr></table>	Complete two-way table	3	B3 cao (B2 for 4 or 5 correct B1 for 2 or 3 correct)

PAPER: 5MB1F_01

13			4 | 7 8 8 5 | 0 0 1 3 5 7 8 6 | 1 2 4 6 6 9 7 | 3 5 8 4 | 7 represents 47 grams	3	B2 for fully correct ordered diagram (B1 for correct unordered diagram or ordered with at most 2 errors) B1 for correct key, eg 4 | 7 represents 47 (grams)

Paper: 1MA0/1F

Question	Working	Answer	Mark	Notes
1 (a)		8	1	B1 cao
(b)		30	2	M1 for 8 + 4 + 6 + 12 or 7 × 4 + 2 A1 cao
(c)		4 circles on Friday	1	B1 cao

Question	Working	Answer	Mark	Notes
10 (a)		28	1	B1 cao
(b)		42	1	B1 cao
(c)		24	2	M1 for complete method to find the difference between males and females condone one error in reading frequencies **or** one error in totalling correct frequencies eg (Males 28 + 16 + 24 + 8) – (Females 16 + 12 + 18 + 6) or 76 − 52 A1 cao **or** M1 for finding the differences for each pair of columns condone one error in reading frequencies eg (28 − 16) + (16 − 12) + (24 − 18) + (8 −6) or 12 + 4 + 6 + 2 A1 cao

Question		Working	Answer	Mark	Notes
15	(a)		$\frac{1}{6}$	2	B2 cao (B1 for any equivalent fraction)
	(b)		75	3	M1 for method to work out degree equivalent of 1 person e.g 60 ÷ 30 (= 2) M1 for a complete method to work out number of women e.g. (360 − 60 − 60 − 90) ÷ "2" oe A1 cao **or** M1 for complete method to work out angle of women sector eg 360 − 60 − 60 − 90 (= 150) M1 for a complete method to work out number of women e.g ("150" ÷ 60) × 30 oe A1 cao
	(c)		Can't tell or No (supported)	1	B1 for a convincing reason e.g. there is no information about the population size this week

Question	Working	Answer	Mark	Notes
20 (a)		Frequency polygon	2	B2 correct frequency polygon (B1 for points plotted correctly but not joined **or** for points plotted at the correct heights, consistently placed within the class intervals (including ends) and joined **or** for an otherwise correct frequency polygon with no more than one point incorrect **or** correct frequency polygon with first and last points joined directly) **NB**: ignore parts of graph drawn to the left of the 1st point or the right of the last point; ignore any histograms drawn.
(b)		$60 < A \leq 80$	1	B1 ft from their frequency polygon

Original question 10

The full source mark scheme begins on page 519. Use the original paper code, tier and question number shown above.

Question	Working	Answer	Mark	Notes
14 (a)		168°, 120°, 72°	M1	for correct working to find an angle (could be implied by one angle drawn correctly on the pie chart)
			A1	for all three angles drawn ±2°
			B1	(dep on M1) for correct labels (languages)
(b)		No and reason	C1	NO and reason given e.g. “don’t have actual figures for Lowry”

3	(a)		Walk	B1	cao
	(b)		7 on chart	B1	for bar of height 7 drawn for girls walking
	(c)		4	B1	cao
	(d)		96	M1	for method to find number of Year 6 students in the survey e.g. 5 + 9 + 6 + 4 + 9 + 7 + 4 + 1 + 2 + 1 (= 48) or 14 + 10 + 16 + 5 + 3 (= 48)
				A1	for 96 or ft from (b), eg 82 if no bar in (b)

Question	Working	Answer	Mark	Notes
5 (a)		Monday wrong	C1	for seeing difference in tally marks and frequency for Monday
(b)		Comment	C1	for suitable comment, eg extra picture for Tuesday needed or explains that 0.5 of a CD is not possible

Paper: 1MA1/3F

Question	Working	Answer	Mark	Notes
1 (a)		Don, Mersey, Trent, Thames, Severn	B1	accept 112, 113, 297, 346, 354
(b)		Shown	C1	shown with correct values eg (112 × 3 =) 336 (and 346) or 112 + 112 + 112 + 10 = 346 or 346 ÷ 3 = 115(.3..) (and 112) or 346 ÷ 112 = 3.089.. oe

10	(a)		Jake with reason	C1	Explanation referring to spread eg range **or** Jakes figures are closer together **or** highest and lowest values for both.
	(b)		Reason	C1	Reason eg stem not used or it should be 26

12	(a)	**12** 7 19 18 **8** 26 **30** 15 **45**	Correct table	B3 (B2 (B1	Fully correct table for 5, 6, 7 or 8 figures correct) for given values entered correctly in the table **or** for a correct row **or** column)
	(b)		$\frac{8}{45}$	B1	for $\frac{8}{45}$ **or** ft from values in table eg $\frac{"8"}{"45"}$

Paper 1MA1: 1F

Question	Working	Answer	Mark	Notes
5 (a)		$\frac{33}{60}$	M1	for method to find number of students who did not walk to school eg 15 + 12 + 6 or 60 – 27 (=33) or 0.55 or for $1-\frac{27}{60}$
			A1	for $\frac{33}{60}$ or equivalent fraction
(b)		Pie chart drawn	M1	for method to find the angle for at least one sector eg $\frac{27}{60}\times 360$, $\frac{12}{60}\times 360$, $\frac{6}{60}\times 360$, $27\div\frac{60}{360}$, $12\div\frac{60}{360}$, $6\div\frac{60}{360}$ oe (0.166..) NB: could be implied by one angle drawn accurately.
			M1	for drawing at least one sector accurately (from 4 sectors) eg 162°or 72°or 36°
			A1	for an accurately drawn pie chart
			B1	(dep on 4 sectors with at least one accurately drawn) for showing labels Walk Car Bicycle

Question	Working	Answer	Mark	Notes
6		Correct pictogram with key	C3 [C2 [C1	for a fully correct pictogram, including key for 2 circles drawn for Friday or $3\frac{3}{4}$ circles (or equivalent) drawn for Saturday] for deducing that one circle represents 4 cycles (or 20 ÷ 5) or $\frac{1}{2}$ circle represents 2 cycles or $\frac{1}{4}$ circle represents 1 cycle]

19	(a)		$160 < h \leq 170$	B1	correct class interval
	(b)		Line segments joining the points (135, 4), (145, 11), (155, 24), (165, 22) and (175, 19)	C2 [C1	for fully correct frequency polygon for points plotted correctly at midpoints of intervals OR joining points with line segments at the correct heights and consistent within the intervals (including end values) OR correct frequency polygon with one point incorrect OR correct frequency polygon with first and last point joined] NB: ignore any histogram drawn and any part of frequency polygon outside range of first and last points plotted

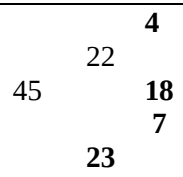
Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
12 (a)	100	B1	for answer in the range 95 to 100	
(b)	660	M1	for reading at least 3 of the required figures from the graph eg 3 of "100", 260, 120, 340, 160, 440 **OR** for 260 – "100" (= 160) **or** 340 – 120 (= 220) **or** 440 – 160 (= 280) **OR** for"100" + 60 (= 160) **or** 80 + 100 + 40 (= 220) **or** 40 + 100 + 100 + 40 (= 280)	Figures may be seen on graph
		M1	(dep) for adding their 3 differences eg "160" + "220" + "280"	
		A1	for 660 or ft their answer to part (a)	
(c)	Tablets	B1	Tablets	
	and statement	C1	Statement eg the bars get proportionally longer over time (most in 2017 and least in 2015) **or** they (more than) double each year **or** for an increase of 280 **or** numbers range from 60 to 340	Values quoted for tablets must be correct. Ignore any calculations relating to laptops and/or desktop computers whether correct or not. Award previous mark if "tablets" is not specifically stated but can be implied from statement.
(d)	Statement (supported)	C1	for statement, eg (No because) we do not know costs or prices or profit.	Answer of 'Yes' gets C0 Answer of 'No' without justification gets C0

Paper: 1MA1/1F

12		Correct pie chart	M1 A1 A1	for method to find at least one angle eg B: 360 ÷ “36” × 11 (= 110) **or** P: 360 ÷ “36” × 17 (= 170) **or** HD: 360 ÷ “36” × 8 (= 80) for at all 3 angles correctly calculated **OR** at least one accurately drawn angle for a fully correct labelled pie chart	Accept numbers if present in Number of fan column eg 0 added to a number is acceptable for this mark. Labels as “snacks” from table not just angle size.

Paper: 1MA1/2F

14			C1 C1 C1 **SC C2** if all 6 figures are shown as the numerator of fractions in the correct places	for correctly placing at least one piece of data (22 or 16) **OR** for finding at least one unknown piece of data (4, 18, 7 or 23) for correctly placing at least one piece of data (22 or 16) **and** for finding at least one unknown piece of data (4, 18, 7 or 23) for a complete correct tree.	Unknown figures may be seen in working and need not be on the diagram Award of this mark implies the first C1

14	(a)	6 | 4799 7 | 0015667 8 | 0011247 9 | 14	B2 (B1 B1	for correct ordered stem and leaf for fully correct unordered or ordered with one error or omission) (indep) for key (units not required but must be correct if stated) eg 6 | 4 = 64 (marks)	
	(b)	Explanation	C1 C1	for identifying "6" students failed (ft their diagram) **OR** for 20 ÷ 4 (= 5) for comparing $\frac{1}{4}$ with $\frac{6}{20}$ or $\frac{3}{10}$ (ft their diagram) **OR** for comparing "6" with 5	Explanation does not need to state that Omar is wrong, but just needs to provide two comparable values (that are not the same) unless ft values show that Omar is not wrong in which case a statement is needed.

7		M1	for use of scaling, eg at least one of 12, 5, and 6 **or** 23 **OR** for using the representation, eg $\frac{30}{4}$ (= 7.5) or 5.75	May be seen on diagram.
		M1	for subtracting their total number of trees from 30, eg 30 – "23" (= 7) **OR** for subtracting the total number of squares from 7.5, eg 7.5 – "5.75" (= 1.75)	"23" must be from addition of 12, 5 and 6 Award 2 marks for 7 seen provided unambiguous "5.75" must be from addition of correct decimals/fractions
		C1	oe	May be alternative representations, eg one square + half square + quarter square or squares may be divided into 4 sections. Any orientation acceptable.

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
12	Correct pie chart	M1	for method to find at least one angle eg P: 360 ÷ 60 × 24 (=144) **or** C: 360 ÷ 60 × 16 (=96) **or** M: 360 ÷ 60 × 20 (=120)	Use the overlay Working may be seen in or by the table
		A1	for all 3 angles correctly calculated **OR** at least one accurately drawn angle	If three equal sectors of 120° with no working award 0 marks
		A1	fully a correct labelled pie chart	Labels as “vegetables” from table not just angle size. Accept P, C, M

Question	Answer	Mark	Mark scheme	Additional guidance
21	14	P1 P1 P1 A1	for process to find total number of boys, 40 – 22 (= 18) **OR** the number of girls who travel by bus 10 – 6 (= 4) for process to find the number of girls who cycle to school 22 – "4" – 9 (=9) **OR** the number of boys who walk to school "18" – 6 – 7 (= 5) full process to find the total number of students who walked to school eg "5"+ 9 or 40 – (6+ 7 + "4" + "9") cao	<table><tr><td></td><td>W</td><td>C</td><td>B</td><td></td></tr><tr><td>boy</td><td>5</td><td>(7)</td><td>(6)</td><td>18</td></tr><tr><td>girl</td><td>(9)</td><td>9</td><td>4</td><td>(22)</td></tr><tr><td></td><td>14</td><td>16</td><td>(10)</td><td>(40)</td></tr></table> Note 16 is 7+9 and 10 is 6+4 6+7 is 13 and 4+9=13 may be seen as intermediate steps

9	(a)(i)	24	B1	cao	
	(ii)	18	B1	cao	
	(b)	Diagram	M1	for 36 ÷ 9 or for using ratio 1 : 8 or setting up $w + 8w$ (=36)	Fully correct diagram with no method shown gets all 3 marks
			A1	for 4 and 32	
			C1	for correct diagram or ft (dep on M1) for drawing "4" and "32"	SC: B2 for 4 full circles for Wed **and** half a circle for Thursday SC: B1 for either Wed correct or for Thurs correct in the diagram if M0 scored

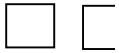
Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
26 (a)	$40 < h \leq 50$	B1	accept 40 – 50 oe	
(b)	polygon drawn (15,7), (25,13) (35,14), (45,12) (55,16), (65,18)	B2 (B1	for fully correct polygon with points plotted at the midpoints for points plotted correctly but not joined by straight lines **or** joining points at correct heights consistently within intervals including plotting at end values **or** correct frequency polygon with one point incorrect **or** correct frequency polygon with first and last points joined directly)	Joining must be with line segments for example, at 10, 20, 30,…or at 20, 30, 40,… Ignore any histogram drawn and any part of frequency polygon outside range of first and last points plotted

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
27	statement	B2	Two different statements **Acceptable** eg should be joined with straight lines (not curve)/should use a ruler 1st (quarter) not shown/plotted/labelled/not all quarters labelled does not show all 4 seasons 9.5 missing from vertical axes/not linear vertical (number) axis does not start at 0/the *y* axis starts at 6 the graph does not begin at 0, it starts at 6 it is not clear what 2, 3, 4 on the *x*-axis mean the scale of years doesn't make sense there is lack of clarity about what the numbers on the *x* axis represent graph is curved line **Not acceptable** eg no value plotted for 2 in 2016 it does not start at 0 (no reference to vertical axis)/missing 0 they should not have connected the dots like that the numbers on the *x* axis are repeated the numbers along the *x* axis 2, 3, 4 the years on the *x* axis have not been written properly does not follow a sequence it needs a discontinuity wiggle on the axis no title	Ignore additional statements provided no contradiction
	statement	(B1	One statement eg from those above.)	

Paper: 1MA1/3F

6	(a)	24	B1	cao	
	(b)		C1	for showing diagrams that represent 12 pictorially	Shapes can come from a combination of shapes, but must sum to 12. Any orientation.
	(c)	84	M1	for a complete method to find the total number eg $3 \times 8 + 3.5 \times 8 + 2.5 \times 8 + 12$ or $(3 + 3\frac{1}{2} + 2\frac{1}{2} + 1\frac{1}{2}) \times 8$ or $24 + 28 + 20 + 12$ or $9 \times 8 + 3 \times 4$ NB ft from (b)	Accept one error in the totals for each month, eg $24 + 28 + 18 + 12$ for the award of this mark. Do not award for omission of figure for April. If work in (a) or (b) consistently shows a misinterpretation of the scale the M mark can still be awarded if also consistent
			A1	cao	

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
18	No with fully correct figures	M1	for $(360 - 60) \div 2$ (= 150) or $\frac{60}{360} \times 480$ (= 80) oe	Angle of 150° may be seen on diagram
		M1	(dep) for method to find required number of students in School **A** eg $\frac{"150"}{360} \times 480$ (= 200) or (480 – "80") ÷ 2 (= 200)	
		M1	for method to find required number of students in School **B**, eg $\frac{"90"}{360} \times 760$ (= 190) or 760 ÷ 4 (= 190)	ft the angle of 90 eg from 360 – 160 – 110 calculated incorrectly, or measured incorrectly from the diagram within the range 88 to 92
		C1	for No with correct figures **Acceptable examples** No, 200 and 190 He is wrong, School A has 10 more **Not acceptable examples** Yes …. No, School A had 20 more [incorrect figures]	

Question	Answer	Mark	Mark scheme	Additional guidance
21	Two statements	C2	Two different statements **Acceptable** There is no 'frequency' label / *y*-axis is not labelled / no title for the *y*-axis The polygon should not be closed / have a line at the bottom / have first and last points connected (15, 6) has been plotted incorrectly / at (15, 8) / (The first point is at) 8 rather than 6 / First point is on an incorrect frequency **Not acceptable** There is no title / Points should be joined with a curve *x*-axis doesn't start at 0 There is no label The axes have not been labelled (*x* and *y*) The points haven't (all) been plotted correctly $10 < w \leq 20$ and $30 < w \leq 40$ have been plotted wrong The first point is plotted incorrectly, its at (15, 7) not (15, 6) The points have been joined up wrong / Points should not be joined in the shape of a triangle / They've connected all the points Done the midpoints rather than the numbers on the right side / The points are in the middle	Ignore additional statements provided no contradiction
		(C1	for one statement eg from those above)	

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
9 (a)	Correct frequencies 8, 3, 5, 2	B2	all frequencies correct	Correct tallies alone scores B1 Correct frequencies with no tallies scores B2
		(B1	Starts to work with tallies, eg 2 tallies fully correct, or 2 frequencies fully correct)	Tallies need not be crossed
(b)	Bar chart	M1	for labelling pet names on the horizontal axis or bars **OR** a linear scale on the vertical axis.	Accept unambiguous abbreviations for labels, eg D, R, C, H Horizontal axis does not need "pet" label
		M1	for at least two correct bars ft their table in (a)	Condone bars of unequal width Condone no gaps or inconsistent gaps Bars must be unambiguously correct for their scale
		A1	for a fully correct bar graph ft from their frequencies or tallies in (a).	All four bars must be correct with labels, ft, to award this mark. Vertical axis must have a suitable label, accept unambiguous abbreviations, eg freq or number Condone no gaps, or inconsistent gaps. Condone bars of unequal width Horizontal axis does not need "pet" label
(c)	dog	B1	cao or ft from frequencies in (a) **or** chart in (b)	Mark to the benefit of the candidate if table and graph are different.

Paper: 1MA1/3F

13	43	M1 A1	for identifying 74 and 31 as the key numbers cao	It is insufficient to identify these on the diagram (eg as 1, 4) –43 as an answer implies M1

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
7	Correct pictogram drawn	C1	deduces that 1 ellipse represents 12 (eggs) oe	eg. ½ ellipse represents 6 (eggs), ¼ ellipse represents 3 (eggs)
		C1	2 ellipses for Tuesday oe	some interpretation of shapes will be needed
		C1	2¼ ellipses for Wednesday oe	
		C1	correctly represented key	
			Alternative (using 1 ellipse to represent a different number of eggs)	
		C2	for a correctly shown key, eg. 1 drawn ellipse represents 4 (eggs) oe **and** one day in agreement with their key.	eg. a correctly represented key plus, $4\frac{1}{2}$ ellipses for Monday oe
		C1	for a second day in agreement with their key	eg. 6 ellipses for Tuesday oe
		C1	for a third day in agreement with their key.	eg. $6\frac{3}{4}$ ellipses for Wednesday oe

Question	Answer	Mark	Mark scheme	Additional guidance
14	Completed table	M1	for correctly entering **two** of 11, 2, 5, 10 (= 30 – 20)	4 2 4 10 1 8 11 20 5 10 15 30
		M1	(indep) for using the rule for the top row eg. ([10 males] – [2 male tennis]) ÷ 2 (=4)	Award 2nd M1 if top row is correct
		A1	for complete correct table	

Question	Answer	Mark	Mark scheme	Additional guidance
26	20 or 24 or 168	B1	for identification of the range of the girls (20) **or** the range (24) **or** the median (168) of the boys	
	Comparison	C2	for a correct comparison of medians **and** a correct comparison of ranges supported by correct figures. eg the median height for girls (165) is less than the median height for boys (168) and the range for girls (20) is less than the range for boys (24) At least one comparison must be in context referring to height or quoting cm.	Simply quoting values for median, range is insufficient; they must be compared.
		(C1	for a correct comparison of medians **or** a correct comparison of ranges that could ft their incorrect figure(s))	Context not necessary for C1

Paper: 1MA1/2F

Question	Answer	Mark	Mark scheme	Additional guidance
7	Two reasons	C2 (C1	for two correct reasons for one correct reason) **Acceptable examples** No label for mark The vertical axis jumps from 0 to 71 The bars are not all the same width Toms bar is twice as wide as the others No axes Toms bar should not take up 4 squares Toms bar shaded 2 not 1 block Tom has 2 bars shaded but the others only have one bar shaded It is not labelled Tom has gone over 2 squares Toms bar is bigger than the others Toms bar is not correct The numbering is not correct **Not acceptable examples** There is no title Different sized gaps between the bars The bars are not symmetrical The bars are not the same size	Allow if one reason is fully correct and the other reason is not. For column accept strip, bar, block, line, cubes in an unambiguous explanation

Paper: 1MA1/2F

14	Correct pie chart	M1	for a method to find at least one angle eg $\frac{50}{(50+45+25)}\times 360$ (= 150) **or** $\frac{45}{(50+45+25)}\times 360$ (= 135) **or** $\frac{25}{(50+45+25)}\times 360$ (= 75) oe	
		A1	for at all 3 angles correctly calculated **OR** at least one correct and accurately drawn angle (from no more than 3 sectors)	Do not award for drawing if the intention is to show more than 3 sectors 3 angles correct in table is enough for this mark irrelevant of diagram
		A1	for a fully correct labelled pie chart	Labels as "City" from table not just angle size.

Paper: 1MA1/2F

6	(a)	5	B1	cao	
	(b)	5, 6	B1	cao	

8	Error identified	C1	error correctly identified **Acceptable examples** bar for brown is too high 16 should be 15 brown needs to be one less brown is wrong the graph does not match the table **Not acceptable examples** no title the gaps between the bars are wrong	

Paper: 1MA1/1F

11	(a)	16	B1	cao	
	(b)	12	M1	for 22 **or** 10 **or** (11 – 5) × 2 oe **or** 1.5 × 8 oe	If the scale is misread in part (a), allow ft marks in parts (b) and (c) for all marks provided consistently used.
			A1	cao	
	(c)	Pictogram	C3	for Thursday = 8 drawn oe **and** Friday = 24 drawn oe	Some interpretation of shapes will be needed
			(C2	for Thursday = 8 drawn oe **or** for Friday = 24 drawn oe **or** Thursday = 8 **and** Friday = 24 **or** for Thursday = 24 drawn oe **and** Friday= 8 drawn oe)	
			(C1	for 32 ÷ 4 (= 8) **or** 32 ÷ 4 × 3 (= 24) **or** 32 ÷ 8 **or** for a total of 32 drawn for Thursday and Friday)	

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
8	7	P1 P1 A1	for 6 + 4 + 5 + 8 + 7 + 5 (= 35) for “35” ÷ 5 cao	Working may be seen on the diagram Allow one error in the 6 readings; intention to add must be clear.

Question	Answer	Mark	Mark scheme	Additional guidance
16 (a)	120	M1	for sensible use of proportion eg $\frac{135}{90}$ (= 1.5) **or** $\frac{90}{135}$ (= $\frac{2}{3}$) **or** 135 × 4 (= 540) **or** 135 ÷ 9 (=15) **or** 80 ÷ 90 (= 0.888...)	ie 135 ÷ 9 but not 135 ÷ 10 without 80 ÷ 9
		M1	for a complete method eg 80 × "1.5" **or** 80 ÷ "$\frac{2}{3}$" **or** "540" × $\frac{80}{360}$ **or** "15" × 8 **or** "0.888..." × 135	
		A1	cao	
(b)	$\frac{50}{540}$	M1	for method to find total number of cars, eg 135 × $\frac{360}{90}$ (= 540) **or** for $\frac{50}{135} \times \frac{1}{4}$ oe **or** begins to work with probability by using a numerator of 50 eg $\frac{50}{a}$ where a >50 and an integer	
		A1	for $\frac{50}{540}$ oe ft "540" from part (a)	Accept any equivalent fraction, decimal form 0.09(25..) or percentage form 9(.25..)%

Paper: 1MA1/2F

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
9	4 **5** 23 **32** **8** 9 7 24 **12** **14** 30 **56**	B3 (B2 (B1	for a fully correct table for at least 7 figures correctly placed) for the given values correctly placed in the table or one correct row or column)	Given values in bold Given values: 5, 32, 8, 12, 14, 56

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
20	1 | 57899 2 | 0224558 3 | 235	B2 (B1 B1	for a fully correct ordered diagram for a fully correct unordered diagram or for an ordered diagram with one error or omission) (indep) for correct key (units not required but must be correct if stated) eg 2|5 represents 25 (cm)	Can be in reverse vertical order (with matching leaves) eg 3,2,1 One number in the wrong position is one error.

6	8	B1	cao	

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
8 (a)	Completed bar chart	B2 (B1	for a fully correct bar chart for one bar correct eg May plotted at 35 **or** June plotted at 20 **OR** May plotted at 20 **and** June plotted at 35)	Condone bars of unequal width Condone no gaps or inconsistent gaps
(b)	Explanation	C1	**Acceptable examples** Half a square is worth 2.5 (not 0.5) It goes to 17.5 Halfway between 15 and 20 is not 15.5 It is between 17 and 18 It could/would be 17 or 18 It goes up in 5s (not 1s) **Not acceptable examples** The bar is in the middle It could/would be 16 (or 19 or 15.6) You can't have half a cm of rain The answer would be a whole number	

21	<table><tr><td>1</td><td>79</td></tr><tr><td>2</td><td>55677789</td></tr><tr><td>3</td><td>377</td></tr><tr><td>4</td><td>57</td></tr></table> Key: eg 2|5 = 25 **or** 20|5 = 25	B2 (B1 B1	for a fully correct ordered diagram for a complete unordered diagram **or** for an ordered diagram with at most one error or omission) for correct key (units not required but must be correct if stated) eg 2|5 **or** 20|5 represents 25 (years)	Accept stem of 10, 20, 30, 40 Can be in reverse vertical order (with matching leaves) eg 4, 3, 2, 1 Errors can be omissions; one number in the wrong position is one error. Key must be consistent with the stem

13	53 19 **67** 139 **17** 26 16 **59** 70 **45** **83** **198**	B3 (B2 (B1	for a fully correct table for at least 7 figures correctly placed) for the 4, 5 or 6 values correctly placed)	

7	29	P1	for a start to a process, eg. (total apples =) 86 + 75 + 92 (= 253) or (total oranges =) 68 + 80 + 76 (= 224) **or** differences each week, eg. (week 1) 86 – 68 (= 18) or (week 2) 75 – 80 (= – 5) or (week 3) 92 – 76 (= 16)	
		P1	for complete process, eg “253” – “224” **or** “18” + “– 5” + “16”	
		A1	cao	

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
26	40 missing from frequency scale Incorrect point (50, 5)	C2	Two different statements **Acceptable** eg (50, 5) / the last point is incorrect the last point should be at (45,5) the last point plotted was placed incorrectly for his last point he has plotted by the end of the data and for the rest he has plotted by the middle he did not use the midpoint, he used 50 instead of 45 40 missing (from vertical axis) vertical scale is not linear the frequency doesn't increase in the same intervals the vertical axis is not right **Not acceptable** eg the last point should be at (40, 5) bottom of the polygon should be connected he didn't start the graph at the origin he did not draw a polygon he has plotted the first 4 points at midpoint (C1 One acceptable statement)	Ignore additional statements provided no contradiction

Question	Answer	Mark	Mark scheme	Additional guidance
13 (a)	60	B1	cao	May be seen on diagram
(b)	50	B1	cao	May be seen on diagram
(c)	80 : 200	P1	for process to **use** the number of children, 80 or the total number of men and women, 200 in a ratio **or** for $\frac{80}{200}$	
		A1	for 80 : 200 oe	Award for a correct ratio even if subsequently incorrectly simplified.

Question	Answer	Mark	Mark scheme	Additional guidance
9	Chart	B1	for correct day labels or a linear scale	Accept key in place of labels
		M1	for correct bars showing information for at least 3 days	Condone bars of varying widths Condone no gaps or inconsistent gaps
		A1	for a fully correct bar chart	Labels of Day and Frequency not essential

15 (a)	Diagram	B2 (B1 B1	for a fully correct ordered diagram for a complete unordered diagram or for an ordered diagram with at most one error or omission) for correct key eg 7 | 1 or 70 | 1 represents 71 Key must be consistent with the stem	<table><tr><td>7</td><td>1 1 4 5 7</td></tr><tr><td>8</td><td>2 4 5 6 7 8 9</td></tr><tr><td>9</td><td>1 4 7 8</td></tr><tr><td>10</td><td>3</td></tr></table> Accept stem of 70, 80, 90, 100 Can be in reverse vertical order (with matching leaves) eg 10, 9, 8, 7 Errors can be omissions; one number in the wrong position is one error.
(b)	86	M1 A1	for identifying the median, eg “6” circled or an answer of 6 **or** ft their list or diagram for selection of middle value (allow up to two errors or omission in listing) for 86 **or** ft their list or diagram for selection of middle value (allow up to two errors or omission in listing)	

Paper: 1MA1/2F

Question	Answer	Mark	Mark scheme	Additional guidance
16	Comments	C1	makes some comment about the labels **Acceptable examples** states what labels should be (not angles) labels are missing The label in the table does not match the label with the pie chart **Not acceptable examples** angles not marked on the pie chart	
		C1	comments about the inaccuracy of the angles in the pie chart **Acceptable examples** pie chart is not accurate / should be 108, 126,126 angles drawn inaccurately They haven't converted the number of potatoes to angles Need to scale the numbers in the table **Not acceptable examples** pie chart is wrong/ sectors are the wrong size (the angles) do not add up to 360	

23	22	P1 P1 A1	for process to find total choosing German eg 200 – 104 – 70 (=26) for complete process to find boys choosing Spanish eg 90 – (60 + (“26” – 18)) cao	for process to find girls choosing French (44) or total number of girls (110) for complete process to find boys choosing Spanish eg 70 – (“110” – “44” – 18)	

	F	S	G	total
girls	**44**	**48**	18	**110**
boys	60	**22**	**8**	90
total	104	70	**26**	200

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
23	Frequency polygon drawn	B2	for fully correct frequency polygon with points plotted at the midpoints	Joining must be with line segments Accept points plotted within half a small square Ignore any histogram drawn and any part of a frequency polygon outside range of first and last points plotted
	(2.5, 8), (7.5, 24) (12.5, 13) (17.5, 11) (22.5, 4)	(B1	for all points plotted correctly but not joined with line segments **or** points plotted at correct heights not at midpoints but consistently within each interval and joined with line segments **or** correct frequency polygon with one point incorrect **or** correct frequency polygon with first and last points joined directly)	for example, at 0, 5, 10,…or at 5, 10, 15,…

11	Shown	M1	for at least three of 40 × 1 (= 40), 50 × 2 (= 100), 60 × 4 (= 240), 70 × 5 (= 350), 80 × 3 (= 240), 90 × 1 (= 90) oe	Intention to multiply is enough for award of M1 May be seen as repeated addition
		M1	(dep M1) for a complete method to find comparable figures (allow up to 2 errors in their products), eg 40 × 1 + 50 × 2 + 60 × 4 + 70 × 5 + 80 × 3 + 90 × 1 oe or for 1200 − 40 × 1 − 50 × 2 − 60 × 4 − 70 × 5 − 80 × 3 − 90 × 1 oe	
		A1	for accurate comparable figures, eg 1060 or 140	Condone incorrect difference if 1060 is clearly seen

Paper: 1MA1/2F

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
9 (a)	6	M1	for ordering the numbers or showing a complete method of (5+7) ÷ 2	
		A1	cao	
(b)	8	B1	cao	
(c)	Bar chart	B1	for correct person labels or a linear scale	Accept key in place of labels Accept unambiguous abbreviations eg Frequency or Number, X,M,K,T
		M1	for correct bars showing information for at least 2 people	Condone bars of varying widths Condone no gaps or inconsistent gaps
		A1	for a fully correct bar chart with linear scale of numbers on the vertical axis and a set of person labels on the horizontal axis	

12	(a)	Merit	B1	cao	
	(b)	24	M1	for beginning to work with proportion eg $105 \div 7$ (= 15) or $7 \div 105$ (= 0.07 or 0.06....) or 360×7 (= 2520) **or** $\frac{360}{105}$ (= 3.4…) **or** works out a quantity for one sector eg $\frac{7}{105} \times 30$ (= 2), $\frac{7}{105} \times 75$ (= 5), $\frac{7}{105} \times 150$ (= 10),	
			M1	for a complete method eg $\frac{360}{105} \times 7$ oe or "3.4…" × 7 **or** 360 ÷ "15" or 360 × "0.06.." **or** "2520" ÷ 105 **or** 7 + "2" + "5" + "10"	
			A1	cao	

Paper: 1MA1/3F

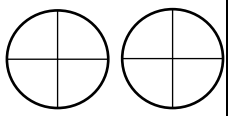
Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
8 (a)	11, 7, 6	B2	for all frequencies correct	Any discrepancy mark frequencies
		(B1	for two tallies or two frequencies correct)	
(b)	Castle	B1	Castle or ft their tallies or frequencies	Any discrepancy ft frequencies
(c)	Bar chart	B1	for correct place labels or a linear scale	Accept key in place of labels Accept unambiguous abbreviations for labels eg C, F, M Condone bars of varying widths Condone no gaps or inconsistent gaps Bars must be unambiguously correct for their scale
		M1	for at least two correct bars ft their table in (a)	
		A1	for a fully correct bar chart with linear scale of numbers on the vertical axis and a set of place labels on the horizontal axis (ft from their frequencies or tallies in (a))	

16	24	P1 P1 P1 A1	for finding the total for adults, eg 160 – 85 (= 75) **or** for finding adult romance, eg 33 – 19 (= 14) **or** for finding children adventure, eg 76 – 34 (= 42) for finding adult horror, eg "75" – 34 – "14" – 7 (= 20) for a process to find the number of children who chose horror, eg 85 – 19 – "42" – "20" (= 4) **or** for a complete process to find total horror, eg (85 – 19 – "42" – "20") + "20" **or** 160 – 33 – 76 – ("20" + 7) cao	<table><tr><td></td><td>R</td><td>A</td><td>H</td><td>T</td><td>Tot</td></tr><tr><td>C</td><td>19</td><td>42</td><td>4</td><td>20</td><td>85</td></tr><tr><td>A</td><td>14</td><td>34</td><td>20</td><td>7</td><td>75</td></tr><tr><td>Tot</td><td>33</td><td>76</td><td>24</td><td>27</td><td>160</td></tr></table> A correct answer unsupported will score 1 mark only

Paper: 1MA1/2F

Question	Answer	Mark	Mark scheme	Additional guidance
17	16 | 0 2 8 17 | 2 2 3 7 8 18 | 0 0 3 4 6 8 19 | 1 7 Key: 16|0 = 160 **or** 160|0 = 160	B2 (B1 B1	for a fully correct ordered diagram for a complete unordered diagram **or** for an ordered diagram with at most one error or omission) (indep) for correct key, eg 16|0 **or** 160|0 represents 160	Accept stem of 160, 170, 180, 190 Can be in reverse vertical order (with matching leaves) eg 19, 18, 17, 16 Errors can be omissions; one number in the wrong position is one error. Key must be consistent with the stem.

6 (a)		C1	for showing diagrams that represent 24 pictorially	shapes can come from a combination of shapes but must sum to 24
(b)	Year 8 (supported)	M1	for beginning to work with the pictogram, eg counting symbols or finding the total for one type of cake	Chocolate = 60 Vanilla = 39 Lemon = 18
		M1	for a complete method to find the total number, eg $5 \times 12 + 3\frac{1}{4} \times 12 + 1\frac{1}{2} \times 12 + 24$ or $60 + 39 + 18 + 24$ (= 141) **or** $5 + 3.25 + 1.5 + 2$ (= 11.75) **or** $150 \div 12$ (= 12.5)	For this M mark use 24 for banana or ft from their diagram, but do not award if banana has been omitted. If only totals are shown allow no more than one error in a total.
		C1	for selecting Year 8 with correct figures, eg Year 8 and 141 **or** Year 8 with 9 more **or** Year 8 with $11\frac{3}{4}$ **and** $12\frac{1}{2}$	

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
7	Bar chart			Accept bar chart, vertical line graph, dual/multiple bar chart, composite bar chart, frequency polygon for all marks. Accept unambiguous abbreviations for labels eg L, P
		M1	for a key, or suitable labels, to identify Lena and Pavel	
		M1	for 3 or 4 correct labels for days **or** a linear scale present	Allow linear scale not starting at 0 Scale must be marked on grid lines.
		M1	for a (bar) chart correctly showing data for at least 1 person or 2 days	Bars / lines / points must be unambiguously correct for their scale (scale must be present). Allow for correctly showing total hours worked for all four days on chart (13, 15, 13, 12)
		C1	for a fully correct (bar) chart with labels for days of the week, vertical axis correctly scaled and labelled and key/labels for Lena and Pavel	Horizontal axis does not need an overall 'day' label Condone frequency for number of hours. For C mark scale must start at 0 and be linear for the range of values plotted. Condone bars of unequal width Condone no gaps or inconsistent gaps

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
15 (a)	64	B1	cao	
(b)	36	M1	for identifying 81 and 45 as the key numbers, eg 81 – 45 or 45 – 81 or 45 to 81	It is insufficient to identify these on the diagram (eg as 1, 5)
		A1	cao	Answer of –36 gets M1A0
(c)	comparison	C1	for a correct comparison of medians that could ft their incorrect median in (a) **Acceptable examples** The adults were faster because they have the smaller median The adults were [11] minutes faster (on average) The adults were faster The adults took less time The children were slower The children took more time Children took [11] minutes more (on average) Children had a larger median than the adults. **Not acceptable examples** The children were faster The adults median was 64, the children's median was 75 11 minutes difference The children had more time to run than the adults	Statement must be entirely true and not contradictory Figures not required in comparison, but if seen must be correct. Where [11] is the difference between 75 and their (a). If median in (a) is greater than 75 then converse statements would be correct ft.

Paper: 1MA1/1F

6	(a)	10	B1	cao	
	(b)	2 full squares and 3 quarters of a square	B1	for a diagram for April showing the equivalent of 2 full squares and 3 quarters of a square	eg 11 quarter squares drawn separately 3 quarters may be seen as one half square and one quarter square
	(c)	18	P1	for process to find houses sold in February = 4 + 4 + 1 (= 9) or March = 4 + 4 + 4 (= 12) **or** 60 – ([Jan + Feb + Mar] + 11)	February and March totals may be seen on the diagram May be implied by 42 [Jan + Feb + Mar] is clearly their houses sold in Jan, Feb and March for this mark only
			P1	for a complete process, eg. 60 – ([answer to part (a)] + "9" + "12" + 11) or $60 - (2\frac{1}{2} + 2\frac{1}{4} + 3) \times 4 - 11$	$4\frac{1}{2}$ squares drawn for May gets P2
			A1	cao	18 must be seen for full marks

Question	Answer	Mark	Mark scheme	Additional guidance
13	Table completed	B3	for all 6 correct	(33) **27** (34) **94** **35** (45) **33** (113) **68** **72** (67) (207)
		(B2	for 4 or 5 correct entries)	
		(B1	for 2 or 3 correct entries)	

14	Pie chart drawn and labelled	M1	for a method to calculate one angle eg $\frac{30}{30+10+50}\times 360$ (= 120) **or** $\frac{10}{30+10+50}\times 360$ (= 40) **or** $\frac{50}{30+10+50}\times 360$ (= 200) oe	
		A1	for all 3 angles correctly calculated **or** at least one correct and accurately drawn angle	Three angles correct in table is enough for this mark regardless of angles in the diagram.
		A1	for a fully correct labelled pie chart	Each sector must be labelled with the associated drink, not angle size.

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
9 (a)	bar at 11 for cricket	M1	for reading from graph of 12 **or** 17	
		M1	(dep) for 40 – ([12]+[17]) (=11)	Where [12] and [17] are their attempt at reading from the graph. May be implied by bar of height 40 – ([12]+[17])
		C1	for bar drawn at 11 for cricket	Condone bar of different width to those given or freehand bar. Shading not required. Bar of height 11 drawn implies M1M1C1
(b)	$\frac{3}{10}$	M1	for $\frac{12}{40}$ or $\frac{6}{20}$	Accept other equivalent fractions. Do not accept equivalent decimals or percentages
		A1	cao	
(c)	$\frac{5}{9}$	B1	for $\frac{5}{9}$ or equivalent fraction	
(d)	1.25 : 1	B1	for 1.25 : 1 or $\frac{5}{4}$: 1 or $1\frac{1}{4}$: 1	Accept $n = 1.25$ Do not accept 1.25 alone or n : 1.25

Question	Answer	Mark	Mark scheme	Additional guidance
11 (a)	110 70 100 280 90 80 50 220 200 150 150 **500**	C3 (C2 (C1	for a fully correct table for 6 or 7 or 8 or 9 or 10 correct entries) for 3 or 4 or 5 correct entries)	
(b)	$\frac{100}{500}$	M1	for $\frac{a}{500}$ where $0 < a < 500$ **or** for $\frac{100}{b}$ where $100 < b \leq 500$ **or** ft their table	100:500 scores M1A0 For M1 ft their table this is for $\frac{\textit{their}\text{ value of adult action from table}}{c}$ where *their* value of action adult $< c \leq 500$
		A1	for $\frac{100}{500}$ oe or ft their table	For A1 ft their table is for $\frac{\textit{their}\text{ value of adult action from table}}{500}$

17	Points plotted at (130, 12) (150, 28) (170, 30) (190, 22) (210, 8) and joined with line segments	B2 (B1	for correct plotting of 5 points and joining with line segments for points plotted correctly at midpoints **or** for a frequency polygon with one point incorrect **or** for a frequency polygon with first and last point joined directly **or** for joining the points with line segments at the correct heights consistent within intervals (including end points))	Ignore any histogram drawn Ignore any part of the frequency polygon outside of the range of the first and last point plotted. for example, at 120, 140, 160, 180, 200 or at 140, 160, 180, 200, 220

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
22	Comparison	B1	for correctly identifying the median of (School) A as 57	
		C1	(ft, dep on value for the median being stated) for making a correct comparison of median eg 'the median of (School) A is higher than the median of (School) B'	If median for school B is stated in the comparison it must be correct
		B1	for correctly identifying the range of (School) A as 49	
		C1	(ft, dep on value for the range being stated) for making a correct comparison of range eg 'the range of (School) A is higher than the range of (School) B'	If range for school B is stated in the comparison it must be correct

6	(a)	42	B1	cao	
	(b)	Yes (supported)	P1	for a start to a process to find figures to compare, eg 33 + 40 + 27 (= 100) **or** 20 + 14 + 15 (= 49) **or** $(33 - 20) + (40 - 14) + (27 - 15)$ $(= 51)$	
			P1	for complete process to give figures to compare, eg 33 + 40 + 27 (= 100) **and** 20 + 14 + 15 (= 49) **and** "49" × 2 (= 98) or 33 + 40 + 27 (= 100) **and** 20 + 14 + 15 (= 49) **and** "100" ÷ 2 (= 50) or 33 + 40 + 27(= 100) **and** 20 + 14 + 15(= 49) **and** "100"−"49"(=51) or 33 + 40 + 27(= 100) **and** $20 \times 2 + 14 \times 2 + 15 \times 2(= 98)$ or $(33 - 20) + (40 - 14) + (27 - 15)$ $(= 51)$ **and** 20 + 14 + 15 (= 49)	
			C1	for Yes with correct supporting figures, eg 100 **and** 98 or 50 **and** 49 or 100 **and** 49 **and** 51 or 51 **and** 49	

Paper: 1MA1/1F

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
7 (a)	Completed bar chart	B2	for a fully correct bar chart	Condone bars of unequal width Condone no gaps or inconsistent gaps
		(B1	for one bar correct, eg '50p' plotted at 8 or '£1' plotted at 3 or both reversed ie '50p' plotted at 3 and '£1' plotted at 8)	
(b)	Shown	M1	for method to find total amount of at least two coin types, from 10(p) × 12 (= 120(p)), 20(p) × 7 (= 140(p)), 50(p) × 8 (= 400(p)), (£)1 × 3 (= 300(p) or (£)3)	Accept mixed units for both method marks e.g. 10p x 12 (= 120) , 20 x 7 (= 1.4) , 50(p) x 8 (= 4) , 1 x 3 (= 300)
		M1	for a complete method to find the total amount of money e.g. "120" + "140" + "400" + "300" (= 960) or "1.20" + "1.40" + "4" + "3" (= 9.60)	Accept mixed units for both method marks e.g. 120 + 140 + 4 + 3 ~~(= 9.60)~~
		C1	(dep on method shown for totals for at least two coin types or separate correct totals for at least two coin types) showing correct comparable figures eg (£)9.6(0) or 960(p) and 1000(p) or (£)0.4(0) or 40p	Answer must be in consistent units 9.60 oe alone with no working will score M1M1

18	13 | 5 7 8 14 | 2 4 6 6 7 9 15 | 0 2 4	B2	for a fully correct ordered diagram	Accept stem of 130, 140, 150 Can be in reverse vertical order (with matching leaves)
		(B1	for a complete unordered diagram or for an ordered diagram with at most one error or omission)	Errors can be omissions; one number in the wrong position is one error
	Key: 13‖5 = 135 or 130‖5 = 135	B1	for a correct key (units not required but must be correct if stated) eg. 13‖5 or 130‖5 represents 135 (cm)	Key must be consistent with the stem

12	75 **7** 20 102 **35** **98** **5** **138** 110 105 **25** 240	B3 (B2 (B1	for a fully correct table for 7, 8, 9, 10 or 11 entries correctly placed) for 6 entries placed correctly)

Question	Answer	Mark	Mark scheme	Additional guidance
14 (a)	Complete pie chart	M1	for a full method to find at least one angle, eg $\frac{360}{(45+20+55)}\times 20\,(=60)$ oe **or** $\frac{55}{(45+20+55)}\times 360\,(=165)$ oe **or** $\frac{135}{45}\times 20\,(=60)$ **or** $\frac{135}{45}\times 55\,(=165)$	Award this mark even if more than 3 sectors are drawn
		A1	for both angles correctly calculated **or** for one correct and accurately drawn angle	Do not award for drawing if the intention is to show more than 3 sectors
		A1	for a fully correct labelled pie chart	Each sector must be labelled with the associated language, not just angle size.
(b)	Explanation	C1	for explanation relating to population size, **Acceptable examples** No as we do not know the number of students in year 11 It would be true if the number of students in each year was the same No as pie charts show proportions not numbers (No) as the populations may not be equal No there may be more/less students in Yr10/Yr 11 Could be different number of degrees per person (on Yr 11 pie chart) Yes but only if there are the same number of students We don't know how many students are in year 10 compared to year 11 **Not acceptable examples** Yes as 150° is bigger than 135° We don't know how many students are in year 10	

Paper: 1MA1/2F

22	Points plotted at (5, 12) (15, 25) (25, 10) (35, 8) (45, 5) and joined with line segments	B2 (B1	for correct plotting of all 5 points at midpoints **and** joining with line segments for correct plotting of all 5 points at midpoints joined with a curve or missing / no line segments **or** for a frequency polygon with one point incorrect **or** for a frequency polygon with first and last point joined directly **or** for plotting of all 5 points at the correct heights consistent within intervals (including end points) **and** joining with line segments	Ignore any histogram drawn Ignore any part of the frequency polygon outside of the range of the first and last point plotted. for example, at 0, 10, 20, 30, 40 or at 10, 20, 30, 40, 50

Paper: 1MA1/3F

PMT

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Mark Scheme (Results)

November 2010

GCSE

GCSE Mathematics (Modular) 5MB1F
Unit 1 - Foundation

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November 2010
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GCSE MATHEMATICS 2MB01

NOTES ON MARKING PRINCIPLES

1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

2 Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will indicate within the table where, and which strands of QWC, are being assessed. The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labeling conventions.

ii) *select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

GCSE MATHEMATICS 2MB01

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
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If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

GCSE MATHEMATICS 2MB01

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Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

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Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

PMT

GCSE MATHEMATICS 2MB01

5MB1F_01
1011

6

GCSE MATHEMATICS 2MB01

5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		8	1	B1 cao
	(b)		5	1	B1 cao
	(c)			1	B1 cao
2	(a)		Pixar	1	B1 cao
	(b)		Pixar, Tacco	1	B1 cao
	(c)		Crystal	1	B1 cao
	(d)		12.73	4	M1 for 112-100 or 12 seen M1 for $24.5\times'12'$ or sight of digits 294 Do not allow '12' to be 100. M1 (dep on one prior M1) for $9.79+'2.94'$ A1 cao

GCSE MATHEMATICS 2MB01

5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
3			e.g. 15 12 15 40 4:15pm 19 30 19 55	5	B1 for a correct departure time (one with an associated arrival time at least 30 mins before film start time) B1 for correct associated arrival time in Peterborough from a correct departure time from Bourne or Baston B1 for either 4:15pm or 5:15pm with one correct bus time) B1 for a correct departure time (at least 2hrs 44mins after film start time) B1 for correct associated arrival time in Baston
4	(a)		unlikely	1	B1 cao
	(b)		even	1	B1 cao
	(c)		impossible	1	B1 cao
	(d)		e.g. blue, blue, blue	1	B1 for two or three ‘blue’ and no ‘red’
5	(a)		Walk	1	B1 cao
	(b)		5	1	B1 cao
	(c)	$4+6+9+5+1=25$	25	2	M1 for adding the frequencies 4,6,9,5,1 or adding 5 frequencies allow one misread error Ie 4+6+9+6+1 A1 cao

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GCSE MATHEMATICS 2MB01

5MB1F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
6 (a)		6	1	B1 cao
(b)		4, 4, 7	2	M1 for identifying two of the numbers as 4 or the sum as 15 (may be implied by three numbers that sum to 15) A1 for 4, 4 and 7 in any order
7*		Diagram or chart	4	B1 for a key or suitable labels to identify boys and girls The key may be ignored if unclear provided the graph is clear, ie if different colours are used to shade in the graph. Give benefit to candidate. B1 for 5 correct labels for days clearly in the appropriate place B1 for a diagram(s) or chart(s)(combined or separate) set up for comparison, showing data for at least three days e.g. dual bar chart, back-to-back stem and leaf diagrams, pie charts, pictograms, etc C1 fully correct diagram or chart to include all axes labeled. QWC: Fully correct diagram or chart and all labelling is correct and clear.

GCSE MATHEMATICS 2MB01

5MB1F_01					
Question		Working	Answer	Mark	Notes
8	(a)	0.80×20 OR reading from graph at distance = 20 miles	16	1	B1 cao
	(b)	£20 = 25 miles $25 \times 3 = 75$ OR $60 \div 0.8 = 75$	75	2	M1 for using £20 = 25 miles oe and intention to multiply OR M1 for $60 \div 0.8$ OR M1 for reading from the graph and an attempt to scale up. Ie 37x2 or 38x2 or 12x6 or 12.5x6 or 13x6 oe And A1 72-78 inclusive
9			Types Tally Frequency	3	B3 for correct table with all three aspects Aspect 1:'method of travel' or for at least 3 of bus, car, walk, ,other etc. Aspect 2: 'tally' or tally marks or 'frequency' or 'number of people' Aspect 3: 'frequency' or frequencies or 'total' or totals or 'number of people' B2 for two aspects B1 for one aspect

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GCSE MATHEMATICS 2MB01

5MB1F_01					
Question		Working	Answer	Mark	Notes
10	(a)		3	1	B1 cao
	(b)	$0\times4+1\times5+2\times4+3\times7+4\times4=50$	50	2	M1 for *fx* calculated (could be implied by at least 2 correct) A1 cao
	(c)	$360°\div24=15$ Sector angles: W=150; D=90; L=120	Angles drawn, labelled	3	M1 for $360\div24$ or 15 seen or one angle correct in pie chart ($\pm2°$), ignore all labels, or one correct angle in the table A1 for any two angles correct in pie chart. Ignore labels A1 for fully correct and labelled pie chart All angles ±2º

GCSE MATHEMATICS 2MB01

5MB1F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
11*	714 × 2 =1428 714 × 0.95 = 678.30 678.30 × 2 = 1356.60 1428 + 1356.60 = 2784.60 802 × 2 = 1604 802 × 0.85 = 681.70 681.70 × 2 = 1363.40 1604 + 1363.40 = 2967.40	Comparison	5	B1 for identifying 714 and 802 M1 for $\frac{95}{100}\times'714'$ oe or $\frac{85}{100}\times'802'$ oe M1 for 2 × 'adult' + 2 × 'child' oe for at least on e holiday A1 for 2784.6(0) and 2967.4(0) or 2785 and 2967 C1 for comparing the costs of their two holidays for 2 adults and 2 children and clearly indicating which is cheaper. Conclusion must clearly follow from working. QWC: Decision and justification should be clear with working clearly presented and attributable. (allow full marks for a candidate who has calculated the cost per day for each holiday (397.8(0) and 211.95(7..)) and compares these costs accordingly.)

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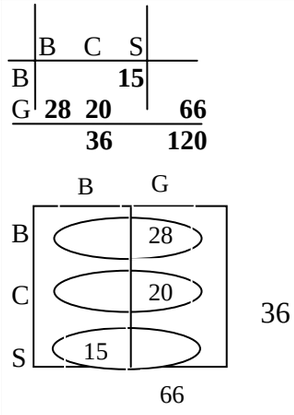
GCSE MATHEMATICS 2MB01

5MB1F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
12 (a)		67	1	B1 cao
(b)	$84-58=26$	26	2	M1 for $84-58$, accept 58 to 84 and $58-84$ A1 cao
(c)		Two comparisons	2	Ft B1 for heart rates faster after walking , bigger median, median increase by 11 Ft B1 for heart rates more spread out after walking, bigger range, range increases by 11 Statements must be entirely true and not contradictory
13		51	4	M1 for a two-way table or Venn diagram with bowling, cinema, skating, boys and girls labelled or a list of at least two combinations clearly labelled. M1 for attempt to find an unknown eg 66 – 28 – 20, 120 – 66, 36 – 20 A1 for 16 or 18 or 54 or 23 or 33 A1 cao (Note: 36 + 15 = 51 scores no marks)

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GCSE MATHEMATICS 2MB01

5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
14*		13.55 × 1.65 = 22.3575 3.10 ÷ 160 × 1000 = 19.375 OR 13.55 × 1.65 = 22.3575 22.3575 ÷ 1000 × 160 = 3.5772 OR 3.10 ÷ 1.65 = 1.8787… 1.8787…÷ 160 × 1000per kg OR $1355 \div 1000 = 1.355$ p/g 3.10 ÷ 1.65 = 187.87…p 187.87…÷ 160 = 1.1742…p/g OR 3.10 ÷ 160 = 0.019375 SF/g 13.55 × 1.65 ÷ 1000 =0.0223575SF/g	Switzerland, with correct explanation	4	M1 for a correct method to obtain two comparable weights e.g. cost of 1kg in Switzerland, ÷ 160 × 1000, × 6.25 (cost of 1 kg in England given) or cost of 160g in England, ÷ 1000 × 160 (cost of 160g in Switzerland given) or cost per gram in each country, ÷ 160 and ÷ 1000 or cost of 800g in each country M1 for converting £ to Swiss francs or Swiss francs to £ (other than £1=1.65 SFr) A1 for two correct values (using same units) for comparison C1 for Country identified from a clear attempt to use comparable weights and prices. QWC: Decision must be stated, with calculations clearly attributable

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Mark Scheme (Results)

March 2012

GCSE Mathematics (2MB01)
Paper 5MB1F_01 (Calculator)

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The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

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5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		42	1	B1 cao
	(b)		81	1	B1 cao
2	(a)		14	1	B1 cao
	(b)		Bus	1	B1 cao
	(c)	8 + 2 + 14 + 6 + 3 + 7	40	2	M1 for (8+) 2+14+6+3+7 or ft from (a) A1 for 40 or ft from (a) SC: award B1 for 32
3*			diagram or chart	4	B1 for suitable labelling or key to differentiate Alexa and Ryan B1 for 5 correct day labels OR a linear scale B1 for accurately representing the data C1 for fully correct diagram or chart with correct and clear labelling and linear numerical scale
4	(a)		Ka	1	B1 cao
	(b)		1	1	B1 cao
	(c)		Fusion	1	B1 cao

5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
5	(a)		unlikely	1	B1 cao
	(b)		impossible	1	B1 cao
	(c)		cross at 0	1	B1 for cross at 0 (tolerance 2mm)
	(d)		$\frac{2}{11}$	2	B2 for $\frac{2}{11}$ oe (B1 for $\frac{x}{11}$, $x < 11$, $x \neq 2$ or $\frac{2}{x}$, $x > 2$, $x \neq 11$) NB: ignore probabilities given in words.
6	(a)(i)		12	2	B1 cao
	(ii)		450		B1 cao
	(b)	£12 ÷ 200	6p	2	M1 for correct use of cost ÷ number of units (eg £12 ÷ 200 or ‘6’ or ‘0.06’) A1 for 6p or £0.06 [units important] oe or ft “12”
	(c)	1300 × 6p	£78	2	M1 for 1300 × ”b” or correct use of graph with suitable multiplier or ‘78’ or ‘7800’ A1 ft for £78 oe (accept £78 to £80) NB: penalise a lack of monetrary units once (at the first error)

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5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
7		13.68 +2 × 8.10 + 6.99 36.87 ÷ 3 36.87 − 12.29 40 − 24.58 OR (13.68 ÷ 3) × 2 = 9.12 (8.10 ÷ 3) × 2 = 5.40 (6.99 ÷ 3) × 2 = 4.66 9.12 + 5.40 + 5.40 + 4.66 = 24.58 40 − 24.58	15.42	4	M1 for 13.68 + 2 × 8.10 + 6.99 oe (=36.87) M1 for (“36.87” ÷ 3) × 2 oe or ”36.87” – (”36.87”÷3) oe M1 for 40 − “24.58” A1 cao **OR** M1 for (13.68 ÷ 3) × 2 or (8.10 ÷ 3) × 2 or (6.99 ÷ 3) × 2 oe M1 for “9.12” + 2 × “5.40” + “4.66” M1 for 40 − “24.58” A1 cao **OR** M1 for (13.68 ÷ 3) × 2 or (8.10 ÷ 3) × 2 or (6.99 ÷ 3) × 2 M1 for subtracting the special offer cost of at least one of each item from 40 M1 for successively subtracting costs of all 4 items A1 cao
8		Complete answer: time at: leaving home leaving Sudbury arrival at Chelmsford arrival at meeting	Schedule planned	3	B1 for leaves home at 0750 or earlier B1 for catches the 0800 train or earlier train OR the next train is consistent with home departure time B1 ft showing arrival time in Chelmsford at 0844 AND arrival time at meeting at 0904 ft (dep on meeting arrival time by 9.30)

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5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
9	(a)(i)		2.23	4	B1 cao
	(ii)	2.19+3×2.23+2.26+2.28+2×2.29+2.31+2.33 22.64 ÷ 10	2.264		M1 for summing heights and dividing by 10 A1 for 2.26(4)
	(iii)		0.14		B1 accept – 0.14
	(b)		mean for men is greater and range for women is greater	2	B1 ft for comparison of means B1 ft for comparison of ranges
10	(a)	299 – 140	159	1	B1 cao
	(b)	140 − 45 – 37 or 140 – 82 58 + 47	105	2	M1 for 140 − 45 − 37 or 58 seen A1 cao
	(c)		(T,T) (T,C) (T,S) (C,C) (C,S) (S,S)	2	B2 All 6 combinations present with no incorrect combinations (B1 at least 3 different combinations) Ignore repeated combinations for B1 or B2

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5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
11		360 ÷ 60 Apple = 18 × 6 = 108 Banana = 23 × 6 = 138 Orange = 9 × 6 = 54 Pear = 10 × 6 = 60	108, 138, 54, 60	4	M1 for evidence of method for at least one angle (could be implied by one correct angle on pie chart or working or in table) A2 for all angles drawn correctly (±2°) (A1 for at least one angle drawn correctly or all angles correct in the table) B1 for sectors labelled with fruit names (dependent on at least one angle drawn correctly and exactly 4 sectors)
12	(a)	0.10 + 0.25 + 0.30 or 1 − (0.15 + 0.20)	0.65	2	M1 for 0.10 + 0.25 + 0.30 or 1 − (0.15 + 0.20) A1 for 0.65 oe SC B1 for 0.85
	(b)	200 × 0.30	60	2	M1 for 200 × 0.30 A1 cao

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5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
13*		2329×0.9 =2096.1 2147×0.95 =2039.65 OR 4658×0.9 =4192.2 4294×0.95 =4079.3	Royal European	5	M1 for use of 2329 or 2147 (or sight of 4658 or 4294) ie selection of correct column M1 for attempting to calculate the discount for both their figures eg 2329×0.1 (=232.90) oe AND 2147×0.05 (=107.35) oe; 4658×0.1 (=465.8) oe AND 4294×0.05 (=214.7) oe) OR for attempting to find the discounted price for one eg 2329×0.9 (=2096.1) oe or 2147×0.95 (=2039.65) oe or 4658×0.9 (=4192.2) oe or 4294×0.95 (=4079.3) oe M1 for attempting to find the discounted price for both eg 2329×0.9 (=2096.1) oe AND 2147×0.95 (=2039.65) oe; 4658×0.9 (=4192.2) oe AND 4294×0.95 (=4079.3) oe A1 for 2096(.1) and 2039(.65) OR 4192(.2) and 4079(.3) figures rounded or truncated. C1 (dep on at least M1) for a statement deducing the cheapest company, but figures used for the comparison must also be stated somewhere, and a clear association with the name of each company.

5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
14	(a)		7 | 1 3 8 8 | 1 4 4 7 8 9 | 1 2 3 5 6 6 6 8 10 | 0 1 3 4 Key: 7 | 1 means 71cm	3	B2 for fully correct diagram Accept a stem of 70, 80, 90, 100 (The order of the numbers in the stem may be reversed) (B1 for ordered leaves or unordered leaves (with one error or omission)) B1 for a correct key (units may be omitted)
	(b)	104 − 71	33	1	B1 for 33 or ft from diagram
	(c)		92.5	1	B1 for 92.5 or ft from diagram if ordered.

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GCSE Mathematics (Linear) 1MA0
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Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect cancelling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.
Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

PMT

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

11 Linear equations

Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

12 Parts of questions

Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers

Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		7025	1	B1 cao
	(b)		Nine thousand four hundred (and) fifty	1	B1 for Nine thousand four hundred (and) fifty Accept 'nine thousand' written as '9 thousand', 'four hundred' written as '4 hundred' and 'fifty' written as '5 tens' or any mixture of these. Do not penalise poor spelling.
	(c)		29	1	B1 for 29 or twenty nine or 29.0
	(d)		7000	1	B1 for 7000 or 7 thousand or seven thousand
2	(a)		8, 10	1	B1 cao
	(b)		24	1	B1 cao
	(c)		reason	1	B1 for a valid reason that demonstrates the understanding that the number of triangles is twice the pattern number
3	(a)		240	1	B1 for 240
	(b)		arrow at 125°C	1	B1 for arrow (or line) pointing within a range of 122.5 to 127.5 (ie nearer to 125 than either 120 or 130) Use professional judgement.
	(c)		6.05 (pm)	1	B1 for 6.05 (pm) oe

1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
4	(a)		Thursday	1	B1 cao
	(b)		7	1	B1 cao
	*(c)		Nick	3	M1 for the intention to add Dave's 4 times or Nick's 4 times A1 for 58 and 64 C1 (dep on M1 and two totals) for clearly stating Nick as their answer or ft from their two totals OR M1 for the intention to find the difference between the times on each of the 4 days A1 for 6 or −6 C1 (dep on M1 and a net difference) for clearly stating Nick as their answer or ft from their difference [SC: B1 for "Nick spent 6 minutes more than Dave on his phone" if M0 scored.]
5			9 squares shaded	1	B1 for any 9 squares shaded oe
6			66	2	M1 for a correct method to find the number of people on the bus if the 15 get off first. (= 57) A1 cao OR M1 for a correct method to find the number of people on the bus if the 9 get on first. (= 81) A1 cao OR M1 for a correct method to find the net change in the number of people on the bus (= 6 or −6) A1 cao

1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
7		20 − 6.65 13.35 ÷ 3	4.45	3	M1 for a correct method to find the amount shared by B, R and T M1 (dep) for a correct method of dividing this amount by 3 A1 cao [SC: B1 for an answer of 17.78 (20 – 6.65 ÷ 3), if M0 scored, with or without working]
8	(a)		3, 6, 9, 3	3	B3 for a table showing all 4 correct frequencies in the correct place. (condone the absence of or any incorrect tallies) [(B2 for 2 or 3 correct tallies or 2 or 3 correct frequencies even in the wrong columns) (B1 for 1 correct tally or 1 correct frequency even in the wrong column)] [SC: B2 for 3/21 and 6/21 and 9/21 and 3/21 shown in the frequency column]
	(b)		3	1	B1 for 3 or ft table in (a)
9			Circle radius 5 cm drawn	1	B1 for a circle of radius 5 cm drawn (condone an alternative centre)

1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
10	(i)		5,15 or 5,125 or 15,125 or 30,50 or 30,60 or 30,90 or 30,100 or 50,60 or 50,90 or 50,100 or 60,90 or 60,100 or 90,100	4	B1 for 2 numbers, from the list, whose sum is an even number.
	(ii)		60 or 100		B1 for 60 or 100 or both
	(iii)		5 or 15		B1 for 5 or 15 or both
	(iv)		125		B1 cao
11		9.39 × 10 24.30 × 3 + 9.39 93.90 − 82.29	£11.61	5	M1 for a correct method to find the most expensive way to buy the 10 cartridges (= 93.90) M1 for a correct method to find the least expensive way to buy the 10 cartridges (= 82.29) M1 (dep on M1 scored) for a correct method to find the difference between their least and their most expensive way, provided that both totals are for the cost of exactly 10 cartridges A1 for 11.61 B1 (indep) for correct units

PMT

1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
12	(a)(i)		B and D	2	B1 cao
	(ii)		G and E		B1 for G and E (allow B and D if not in (i))
	(b)	3 + 3 + 3 + 2 + 2 +1 + 1 + 1	16	1	B1 cao
13	(a)		6am	1	B1 for 6am (accept −4) Do not accept 6 alone.
	(b)		3	1	B1 for 3 (allow − 3)
	(c)	−1−5	−6	2	M1 for −1 − 5 or intention to subtract 5 from -1 (may be shown on a diagram) A1 cao

1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*14			Yes + supporting work	4	M1 for adding the weights of all the ingredients (= 96) M1 (dep) for '96' × 8 A1 cao for 768 C1 (dep on M2), ft for a correct conclusion (yes or no) from a comparison of 750 (pots) with their '768' pots; units must be quoted [SC: B1 for 768 seen without working if M0M0 scored] **OR** M1 for adding the weights of all the ingredients (= 96) M1 for 750 ÷ 8 A1 cao for 93.75 C1(dep on M2), ft for a correct conclusion (yes or no) from a comparison of their weight of ingredients in one tank full '93.75' kg with '96' kg; units must be quoted [SC: B1 for 93.75 seen without working if M0M0 scored]] **OR** M1 for adding the weights of all the ingredients (= 96) M1 (dep) for 750 ÷ '96' A1 cao for 7.8125 C1(dep on M2), ft for a correct conclusion (yes or no) from a comparison of their number of pots, '7.8125' pots with 8 (pots); units must be quoted [SC: B1 for 7.8125 seen without working if M0M0 scored]]
15			85 29 54 **168** **93** 31 47 171 13 5 **9** **27** 191 **65** **110** 366	3	B3 for fully correct table (B2 for 3 or 4 or 5 correct entries, B1 for 1 or 2 correct entries)

PMT

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
16	(a)(i)		5	3	B1 cao
	(ii)		8		B1 cao
	(iii)		5		B1 cao
	(b)		correct sketch	2	B2 for fully correct sketch [B1 for a square (or rectangle) drawn with 2 or 3 connecting triangles on the outside of the square]
17	(a)(i)		12.978(61279…)	2	B1 for 12.978(…..)
	(ii)		13		B1 for 13 or ft from a(i) [Note: An answer of 13.0 gets B0]
	(b)		100000	1	B1 cao
18	(a)	$2 \times 8 = 16$ $16 + 7$	23	2	M1 for correct substitution of 8 into the expression $2f$ A1 cao
	(b)	$3 \times -2 + 5 \times 4$	14	2	M1 for correct substitution into the formula A1 cao

PMT

1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
19	(a)		$\frac{40}{360}$	1	B1 for $\frac{40}{360}$ oe (ignore any incorrect simplification) Accept 0.11…. if no fraction shown
	(b)		4	3	M1 for a correct method to find the angle of the 'weeding' sector If measured, accept an angle between 138 and 142 inc. M1 (dep) for a correct method to find the number of degrees per hour (= 20) or the number of hours ($\frac{1}{20}$ (3 mins) per degree A1 cao for 4
20	(a)		2.5	2	M1 for 10 (cm) or "10" ÷ 4 A1 for 2.45 – 2.55
	(b)		A marked on diagram	2	M1 for a point marked (or line drawn) on a bearing of 038° from either point B or point W, OR for a point marked (or arc drawn) 6 cm from B A1 for the position of Avebury marked (accept without label if not ambiguous)

PMT

1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
21	(a)		30	1	B1 for 30 minutes oe
	(b)		20	1	B1 cao
	(c)		graph completed	2	B1 for horizontal line from (5, 20) to (5.30, 20) B1 for a single straight line with the correct gradient from '(5.30, 20)' to the time axis
22	(a)		$x = 3$ drawn	1	B1 for $x = 3$ drawn [Note: each line drawn must be a single line segment satisfying $x = 3$]
	(b)		$y = x$ drawn	1	B1 for $y = x$ drawn [Note: each line drawn must be a single line segment satisfying $y = x$]
	(c)	Gradient = $\frac{3-0}{0--2}$	1.5	2	M1 for a method to find the gradient of the given line A1 for 1.5 oe
23	(a)		n^8	1	B1 for n^8 (accept n^{5+3})
	(b)		n^5	1	B1 for n^5 (accept n^{7-2})

PMT

1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
24	(a)	15 ÷ 6	2.5	2	M1 for 15 ÷ 6 oe A1 for 2.5 or $2\frac{1}{2}$
	*(b)		Yes + evidence	2	M1 for a correct method to change 15 miles into kilometres C1(dep on M1) for 24 km **and** statement with correct conclusion [SC: B1 for "Yes" oe and 24 km shown if M0 scored] **OR** M1 for a correct method to change 20 kilometres into miles C1(dep on M1) for 12.5 miles **and** statement with correct conclusion [SC: B1 for "Yes" oe and 12.5 miles shown if M0 scored]

1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
25			414.96	5	M1 for a correct method to work out the amount of oil required to fill the tank M1 for a correct method to find the cost of oil required before the discount M1 for a correct method of finding 5% of their calculated cost M1 (dep on previous M1) for a correct method to find the discounted cost A1 for correct answer of 414.96 or 41496p **OR** M1 for a correct method of finding 5% of the cost of 1 litre of oil M1 (dep on previous M1) for a correct method to find the discounted cost of 1 litre of oil M1 for a correct method to work out the amount of oil required to fill the tank M1 for a correct method to find the discounted cost of the oil required A1 for correct answer of 414.96 or 41496p **OR** M1 for a correct method to work out the amount of oil required to fill the tank M1 for a correct method of finding 5% of their calculated amount of oil M1 (dep on previous M1) for a correct method to find the reduced amount of oil M1 for a correct method to find the cost of the reduced amount of oil A1 for correct answer of 414.96 or 41496p

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1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
26	(a)	$1 - 0.2 - 0.1$ $0.7 \div 2$	0.35	3	M1 for correctly using total probability 1 or 100% if percentages used M1 (dep) for complete correct method to complete the solution A1 for 0.35 or 35% or $\frac{35}{100}$ oe
	(b)	0.1×200	20	2	M1 for 0.1×200 A1 cao [SC: B1 for an answer of $\frac{20}{200}$ if M0 scored]
27	(a)		$3x + 12$	1	B1 for $3x + 12$ or $12 + 3x$
	(b)		$x^3 + 2x$	2	M1 for the intention to multiply both terms in the bracket by x A1 for $x^3 + 2x$ OR B2 for $x^3 + 2x$ [B1 for x^3 or $2x$ seen]
	(c)		$x(x - 6)$	1	B1 for $x(x - 6)$ or $(x - 6)x$

1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
28			1180	3	M1 for a correct method to find the area of the cross section M1 (dep) for a complete correct method for the volume of the prism A1 cao OR M1 for a correct method to find the volume of one cuboid M1 (dep) for a complete correct method for the volume of the prism A1 cao

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Mark Scheme (Results)

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Summer 2013
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NOTES ON MARKING PRINCIPLES

1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

2 Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will indicate within the table where, and which strands of QWC, are being assessed. The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labeling conventions.

ii*) select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

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Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

12 Parts of questions
Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

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Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

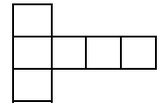
PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		2085	1	B1 for 2085 or 2,085
	(b)		five thousand, one hundred and eight	1	B1 for five thousand, one hundred (and) eight
	(c)		9 tenths		B1 for 9 tenths oe, eg $\frac{9}{10}$ or $\frac{90}{100}$
	(d)		160	1	B1 cao
2			inches grams litres	3	B1 for inch(es) or ins B1 for gram(s) or g B1 for litre(s) or *l* or millilitre(s) or m*l* (accept centilitres or cc or c*l* or cm^3)
3	(a)(i)		right angle marked	1	B1 for a clear intention to mark bottom left hand angle with R (accept r)or right-angle marked
	(ii)		acute	1	B1 for acute
	(iii)		reflex	1	B1 for reflex
	(b)		perpendicular line from *T* to *AB*	1	B1 for perpendicular line from *T* to *AB* (within guidelines of overlay)
4	(a)		5*m*	1	B1 for 5*m* or 5×*m* or *m*×5 or *m*5
	(b)		9*p*	1	B1 for 9*p* or *p*9
	(c)		4*tw*	1	B1 for 4*tw* or 4*wt* or *tw*4 or *wt*4 (condone 4×*tw* and 4×*wt*)

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
5			$\frac{40}{200}$	3	**(uses frequencies)** M1 for 40 or 200 or any correct day total M1 for $\frac{40}{T}$, $T > 40$ or $\frac{n}{200}$, $n < 200$ A1 for $\frac{40}{200}$ oe accept 20% OR **(uses boxes)** M1 for 2 or 10 M1 for $\frac{2}{T}$, $T > 2$ or $\frac{n}{10}$, $n < 10$ A1 for $\frac{2}{10}$ oe accept 20% OR **(uses rectangles)** M1 for 8 or 40 M1 for $\frac{8}{T}$, $T > 8$ or $\frac{n}{40}$, $n < 40$ A1 for $\frac{8}{40}$ oe accept 20% [SC B2 for 40 out of 200 oe]
6	(a)		circle drawn, centre O radius OP	1	B1 for circle drawn radius OP within guidelines of overlay
	(b)		chord drawn	1	B1 for any line drawn joining two points on circumference of circle (accept diameter) [NB shaded segment scores B0]

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
7			110	2	M1 for 30 + 70 + 20 (=120) or 50 + 40 + 20 (=110) or 50 + 10 + 60 (=120) A1 cao
8	(a)	4 × 3	12	1	B1 cao
	(b)		5	2	M1 for 4 × 2 – 3 A1 cao
9			5%	2	**(uses percentages)** M1 for 30 – 25 (= 5) or 25 – 30 (= −5) A1 for 5% oe OR **(uses decimals)** M1 for or 0.3 – 0.25 or 0.25 – 0.3 (= −0.05) A1 for 0.05 OR **(uses fractions)** M1 for $\frac{30}{100} - \frac{1}{4}$ or $\frac{1}{4} - \frac{30}{100}$ $(=-\frac{5}{100})$ A1 for $\frac{5}{100}$ oe OR **(uses trial value, eg 60)** M1 for 0.3×60 – 0.25×60 (=3) or 0.25×60 – 0.3×60 (= −3) A1 for $\frac{3}{60}$ oe
*10			diagram or chart	4	B1 for a key or suitable labels to identify Kitty and George B1 for diagram(s) or chart(s) set up for comparison, showing data for at least 3 months, eg dual bar chart, line graph etc B1 for correct heights for Kitty **or** George, dependent on a linear scale C1 for a fully correct diagram or chart to include 4 months labelled and eg 'cars' or 'frequency' axis correctly scaled and labelled

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
11	(a)		12	1	B1 cao
	(b)		14	1	B1 cao
	(c)		16	1	B1 cao
12	(i)	2 2 3 3 3 4 4 5 5 6	3.5	6	M1 for ordering the data condone one extra or one omission A1 for 3.5 or $3\frac{1}{2}$
	(ii)		4		M1 for 6 – 2 or 2 – 6 A1 cao
	(iii)		3.7		M1 for (2+2+3+3+3+4+4+5+5+6) ÷ 10 condone missing brackets or 37÷10 A1 for 3.7 or $3\frac{7}{10}$ [SC B1 for 31.6 or 33.4]
13			60	3	M1 for 9 × 14 + 6 (=132) M1 (dep) for full method to convert '132' from lbs to kg using the graph **or** for '132'÷2.2 (=60) A1 for 59 – 62 OR M1 for reading off 14 lbs (= 6.2–6.5) and 6 lbs (=2.4–2.9) M1 (dep) for 9 × '6.4' + '2.75' A1 for 59 – 62 [SC B2 for 66]

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*14			Correct statement	4	M1 for 6.50 × 8 + 12 or 6.50 × 7 + 15 M1 for 6.50 × 8 + 12 and 6.50 × 7 + 15 A1 for 64 and 60.5(0) C1 (dep on first M1) for correct statement ft their figures OR M1 for 6.50 × (8−7) or 15−12 M1 for 6.50 × (8−7) and 15−12 A1 for 6.5(0) and 3 C1 (dep on first M1) for correct statement ft their figures [SC If no working shown B1 for 64 and 60.5(0) **or** B1 for 6.5(0) and 3]
15			coin / tally / freq £1 / lll / 3 50p / / (0) 20p / ~~llll~~1 / 6 10p / lll / 3 5p / ll / 2 2p / / (0) 1p / ll / 2	2	B2 for all frequencies correct condone missing 0s (B1 for at least 3 correct non zero frequencies or at least 3 correct non zero tallies or at least 2 correct non zero tallies with their frequencies correct)

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
16	(a)		8	1	B1 cao
	(b)			2	M1 for 5 or 6 squares drawn and joined A1 for a correct net [NB missing internal lines may be implied by grid]
	(c)		54	2	M1 for 3 × 3 × 6 oe A1 cao
17	(a)		720	2	M1 for 6 × 120 or 600 × 120 ÷ 100 oe A1 for 720 oe (accept 720.0)
	(b)		£10 or €12	3	M1 for 540÷1.2 (=450) oe, eg 4×100+50 (=450) M1(dep) for 460 – '450' (=10) A1 for £10 oe (accept £10.0) OR M1 for 460×1.2 (=552) oe, eg 4×120+60+12 (=552) M1 (dep) for '552' – 540 (=12) A1 for €12 oe (accept €12.0)
18			11	3	M1 for $52 \times \frac{3}{4}$ (=39) oe or $\frac{120}{360} \times 150$ (=50) oe M1 for $52 \times \frac{3}{4}$ (=39) oe and $\frac{120}{360} \times 150$ (=50) oe A1 cao

PMT

PAPER: 1MA0_2F					
Question		Working	Answer	Mark	Notes
19	(a)		40	3	M1 for 120 × 100 (=12 000) or 20 × 15 (=300) M1 (dep) for '12 000' ÷ '300' A1 cao OR M1 for 120 ÷ 15 (= 8) or 100 ÷ 20 (= 5) M1 (dep) for '8' × '5' A1 cao OR M1 for 120 ÷ 20 (=6) or 100 ÷ 15 (=6.66…) M1 (dep) for '6'×'6.66…' (=40) or '6'×'6' (=36) or '6'×'7' (=42) A1 cao
	(b)		10.40	2	M1 for $\frac{20}{100} \times 52$ oe A1 for 10.4(0) [SC B1 for 62.4(0) or 41.6(0)]

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*20		**(Method 1)** Angle *ACB* = 180 – 135 (= 45) (sum of angles on a straight line = 180) Angle *ABC* = 180 – 70 – 45 (=65) (sum of angles in a triangle = 180 (*x* =) 180 – 65 (=115) (sum of angles on a straight line = 180) OR **(Method 2)** Angle *ACB* = 180 – 135 (= 45) (sum of angles on a straight line = 180) (*x* =) 70 + 45 (=115) (exterior angle = sum of interior opposite angles) OR **(Method 3)** Angle DAB = 180 – 70 = 110 (sum of angles on a straight line = 180) (*x* =) 360 – 135 – 110 (sum of exterior angles of a polygon = 360)	*x* = 115	5	M1 for correct method to find angle *DAB* or angle *ACB* or angle *ABC* (may be implied by correct angle marked in diagram) M1 for complete correct method to find *x* A1 for *x* = 115 C2 (dep on M1) for fully correct reasons for chosen method no extras (C1 (dep on M1) for one correct reason for chosen method) [NB *x* = 115 must be stated explicitly, 115 only scores A0]

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PAPER: 1MA0_2F					
Question		Working	Answer	Mark	Notes
21	(a)		2.70	3	M1 for 2 × 1.40 + 2.10 + 2.40 (= 7.30) M1 (dep) for 10 – '7.30' or 2.7(0) A1 for 2.70 in correct money notation OR M1 for subtracting at least 2 different correct costs from (£)10 M1 for 10 – 1.40 – 1.40 – 2.10 – 2.40 A1 for 2.70 in correct money notation [SC B1 for 4.10 in correct money notation]
	(b)		2.21	3	M1 for 2.60×0.15 (= 0.39) or 260×0.15 (=39p) M1 (dep) for 2.60 – '0.39' or 260–39 (=221p) A1 cao OR M1 for 1 – 0.15 (=0.85) or 100 – 15 (=85) M1 (dep) for 2.60 × 0.85 oe A1 cao

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*22			Not enough mincemeat since 600<700 OR Only able to make 38 mince pies since insufficient mincemeat	4	M1 for 45 ÷ 18 (= 2.5) M1 for 2.5 used as factor or divisor A1 for 562.5 and 875 and 250 and 700 and 2.5 (accept 2 or 3) OR for availables as 400 and 400 and 200 and 240 and 2.4 (accept 2 or 3) C1 ft (dep on at least M1) for identifying and stating which ingredient is insufficient for the recipe (with some supportive evidence) OR M1 for a correct method to determine the number of pies one ingredient could produce M1 for a correct method to determine the number of pies **all** ingredient could produce A1 for 80 and 51 and 90 and 38 and 108 C1 ft (dep on at least M1) for identifying and stating which ingredient is insufficient for the recipe (with some supportive evidence)
23	(a)		Response boxes overlap and are not exhaustive	2	B2 for **TWO** aspects from: No time frame given Non-exhaustive responses Response boxes over-lapping (B1 for ONE correct aspect)
	(b)		How many magazines do you buy each month? 0-4 5-8 over 8	2	B1 for a question with a time frame B1 for at least 3 correctly labelled response boxes (non-overlapping, need not be exhaustive) **or** for a set of response boxes that are exhaustive (could be overlapping) [NB do not allow inequalities in response boxes]
	(c)		One reason	1	B1 for one reason eg all the same age, may all be males, may all like same types of magazines, sample too small, biased

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
24		<table><tr><th>x</th><th>$x^3 + 2x$</th></tr><tr><td>4</td><td>72</td></tr><tr><td>4.1</td><td>77.(121)</td></tr><tr><td>4.2</td><td>82.(488)</td></tr><tr><td>4.3</td><td>88.(107)</td></tr><tr><td>4.4</td><td>93.(984)</td></tr><tr><td>4.5</td><td>100.(125)</td></tr><tr><td>4.6</td><td>106.(536)</td></tr><tr><td>4.7</td><td>113.(223)</td></tr><tr><td>4.8</td><td>120.(192)</td></tr><tr><td>4.9</td><td>127.(449)</td></tr><tr><td>5</td><td>135</td></tr><tr><td></td><td></td></tr><tr><td>4.65</td><td>109.8(44625)</td></tr><tr><td>4.66</td><td>110.5(14696)</td></tr><tr><td>4.67</td><td>111.1(87563)</td></tr><tr><td>4.68</td><td>111.8(63232)</td></tr><tr><td>4.69</td><td>112.5(41709)</td></tr></table>	4.7	4	B2 for a trial $4.6 \leq x \leq 4.7$ evaluated correctly (B1 for a trial evaluated correctly for $4 \leq x \leq 5$) B1 for a different trial evaluated correctly for $4.65 \leq x < 4.7$ B1 (dep on at least one previous B1) for 4.7 [Note: Trials should be evaluated to at least accuracy shown in table, truncated or rounded] [NB No working scores 0 marks]

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PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
25			28% or $\frac{14}{50}$	4	M1 for 100 − 30 (=70) or $1-\frac{3}{10}(=\frac{7}{10})$ M1 for '+70' ÷ (3 + 2) (=14) or '$\frac{7}{10}$' ÷ (3 + 2)(= $\frac{7}{50}$) M1 for '14' × 2 or $\frac{7}{50}\times 2$ A1 for 28% or $\frac{14}{50}$ oe OR M1 for a correct method to find (100−30)% of any actual sum of money, eg 0.7×500 M1 for '350' ÷ (3 + 2) (=70) M1 for '70' × 2 (=140) A1 for 28% or $\frac{14}{50}$ oe OR M1 for starting with a two numbers in ratio 3:2, eg 21 and 14 M1 for equating sum of their numbers to 100 – 30 (=70), eg '21' + '14' (=35) M1 for scaling sum of their numbers to 100%, eg '35'÷70×100 (=50) A1 for 28% or $\frac{14}{50}$ oe [SC award B3 for oe answers expressed in an incorrect form eg $\frac{2.8}{10}$]
26		$3x - 6 = x + 7$ $2x = 13$	6.5	3	M1 for $3\times x - 3\times 2$ (=$3x$ – 6) or $\frac{x}{3}+\frac{7}{3}$ seen M1 for correct method to isolate the terms in x or the number terms on opposite sides of an equation A1 for 6.5 oe
27			3.52	3	M1 for $1.35^2 + 3.25^2$ M1 (dep) for $\sqrt{(1.35^2 + 3.25^2)}$ (=$\sqrt{12.385}$) A1 for answer in the range 3.51 to 3.52

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Modifications to the mark scheme for Modified Large Print (MLP) papers.

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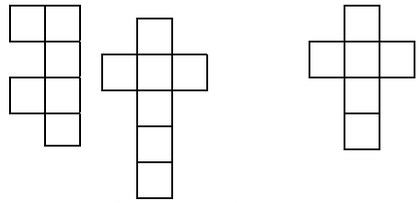
Measurements of length: ±5 mm

PAPER: 1MA0_2F			
Question		**Modification**	**Notes**
2		MLP: candidates told that there are three spaces to fill. Braille: table shows: (i) centimetres (ii) ounces (iii) pints and candidates have been asked to write down what is missing.	Standard mark scheme Standard mark scheme
3	(a)	size of diagram is ×1.5	Standard mark scheme
	(b)	Line AB is 10 cm and T is 5 cm away from the line.	Standard mark scheme
6	(a)	OP = 5 cm and is a horizontal line.	B1 for circle drawn radius 4.5 to 5.5 cm
	(b)	circle size is increased by 1.5	Standard mark scheme
8	(a)	a is changed to e and b to f.	Standard mark scheme
10		1.5 cm grid.	B1 for <u>intention</u> to draw correct heights for Kitty **or** George, dependent on a linear scale

PMT

PAPER: 1MA0_2F			
Question		**Modification**	**Notes**
13		*x*-axis:1.5 cm for $\frac{1}{2}$ *y*-axis: 1.5 cm for 2 Leeway will be needed in marking answers.	Standard mark scheme
16	(a)	Models as well as diagrams provided.	Standard mark scheme
	(b)	Question changed, now reads: Look at the diagrams for Question 16(b). Which diagram, Shape 1, Shape 2 or Shape 3 is the net of a cube?'  Shape 1 shape2 shape3	B2 for diagram 3
	(c)	models as well as diagrams provided.	Standard mark scheme
20		Wording added: 'Angle FCA = 135^0 Angle CAB = 70^0	Standard mark scheme
26		MLP only: *x* is changed to *y*.	Standard mark scheme
27		Braille only. Wording added: '*XY* = 1.35 metres. *YZ* = 3.25 metres.'	Standard mark scheme

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GCSE Mathematics (2MB01) Foundation
5MB1F (Calculator) Paper 01

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4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

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i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labeling conventions.

ii) *select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.

If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.

If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.

If there is no answer on the answer line then check the working for an obvious answer.

Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader.

If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.

Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect canceling of a fraction that would otherwise be correct

It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.

Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

11 Linear equations

Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

12 Parts of questions

Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers

Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

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Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

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PAPER: 5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		2	1	B1 cao
	(b)		8	1	B1 cao
2	(a)		3.5	1	B1 oe
	(b)		2400	1	B1 cao
3	(a)		08 23	1	B1 oe e.g.8 23 am/pm or 20 23 or in words
	(b)	0845 to 09 00 is 15 mins 09 00 to 10 00 is 1 hour 10 00 to 10 20 is 20 mins	1h 35 min	2	M1 for attempt to subtract the two times with evidence of 60 minutes in an hour or for attempt to add on from 8 45 to 10 20 or 1h 35 min incorrectly stated A1 for 1 hour 35 minutes oe
4	(a)(i)		20	2	B1 cao
	(ii)		45		B1 cao
	(b)	10+20+40+45+75+80+40 **Or** 14 × 20 + 10 +5 + 15	310	2	M1 for attempt to find the total by adding individual days ft from (a) or 14 × 20 A1 ft from their readings in (a)

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PAPER: 5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
5	(a)		33	2	M1 for 45 – 12 or 12 to 45 or 24 – 20 A1 cao
	(b)	12, 15, 15, 18, 20, 20, 22, 24, 25, 32, 36, 45	21	2	M1 for arranging the numbers in order or stating 28.5 A1 for 21 cao
	(c)	(12+15+15+18+20+20+22 +24+25+32+40+45) ÷ 12	24	2	M1 for attempt to add and divide by 12
6		1r, 1b, 1g, 2r, 2b,2g,3r,3b,3g 4r, 4b, 4g, 5r, 5b, 5g **or** r1, r2, r,3 r4, r5 g1, g2, g3, g4, g5 b1, b2, b3, b4, b5	List outcomes	2	B2 for all 15 outcomes, ignore duplicates (B1 for at least 6 outcomes ignoring duplicates or omissions)
*7			Appropriate diagram or chart	4	B1 for a key or suitable labels to identify boys and girls. The key may be ignored if unclear provided the graph is clear, i.e if different colours or shading is used on the graph. B1 for five correct labels for days clearly shown in appropriate places B1 for diagram(s) or chart(s) (combined or separate) set up for comparison, showing data for at least three days e.g. dual bar chart, back to back stem and leaf, pie charts, pictograms etc. C1 for fully correct diagram or chart to include all axes labelled (or appropriate keys)

PAPER: 5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*8		3546 – 3298 = 248 248 × 12 = 2976 **Or** 3546 × 12 = 42552 3298 × 12 = 39576 42552 – 39576 = 2976	£29.76 or 2976 p	4	M1 for subtracting to find units used M1 for "248" × 12 A1 for digits 2976 seen C1ft (dep on at least M1) for £29.76 or 2976p **Or** M1 for 3546 × 12 or 3298 × 12 M1 for "42552" – "39576" A1 for digits 2976 seen C1ft (dep on at least M1) for £29.76 or 2976p NB: ×0.12 acceptable in place of ×12
9			£267	2	M1 for selecting one correct item from the table i.e. £122 or £145 (may be circled in the table or written in the workspace) A1 for £267
10	(a) (b)		$4d$ $4x + 12y$	1 2	B1 oe B2 for $4x + 12y$ oe (B1 for $4x$ oe or $12y$ oe seen as part of an expression in terms of x and/or y

PAPER: 5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
11			Suitable data collection sheet	3	B1 for data grouped in intervals that are not overlapping B1 for tally column or frequency columns labelled B1 for suitable data collection sheet appropriate to the task e.g. with exactly 3 columns and which are correctly labelled NB do not accept questionnaires or graphs
12	(a)(i)		46-50	2	B1 for 46 – 50
	(ii)		$\frac{48}{360}$		B1 ft from their part (i) for their $\frac{48}{360}$, $\frac{8}{60}$, $\frac{2}{15}$ oe; do not accept decimals.
	(b)		23	3	M1 ft for 360 – (90 + "48" +" 84") [=136-140] M1 ft for 360 ÷ 60 = 6º or "138" ÷ 6 A1 cao **Or** M1 ft for 360 – (90 + "48" + "84") [=136-140] M1ft for using their 138 in $\frac{138}{360}\times 60$ (=22.5 – 23.5) A1 cao
13	(a)		$\frac{15}{100}$	5	M1 for fraction with 15 as the numerator or 100 as the denominator A1 for $\frac{15}{100}$ oe or 0.15 or 15%
	(b)		0	1	B1 oe Accept $\frac{0}{100}$, 0%, 0 out of 100 but not 0:100
	(c)		$\frac{1}{10}$		M1 for 100 – (50 + 25 + 15) A1 oe

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PAPER: 5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
14	(a)		68	1	B1 cao
	(b)		37	1	B1 cao
	(c)		41	2	M1 for an attempt to find the middle number or circling the 1 in the diagram or writing 1 or 4|1 A1 cao
15	(a)		Two reasons	2	B1 for no time scale e.g. day, week etc B1 for vague times e.g don't know how long a little is, no units
	(b)		Better question	2	B1 for stem which must include a time scale B1 for at least 3 non overlapping response boxes (not necessarily exhaustive) or at least 3 boxes that are exhaustive (but could be overlapping) **NB** Units must be included in either stem or response boxes to score full marks
	(c)		Biased sample	1	B1 for biased or not representative sample eg could all be too similar

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PAPER: 5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
16			Points plotted at (5, 6), (15, 9), (25, 8), (35, 7), (45,5) and joined with line segments	2	B2 for correct plotting of 5 points and joining with line segments (B1 for points plotted correctly at midpoints of intervals OR joining points with line segments at the correct heights and consistent within the class interval (including end values) OR correct frequency polygon with one point incorrect OR correct frequency polygon with first and last point joined) NB Ignore any histogram drawn and any part of frequency polygon outside range of first and last points plotted
17			29	4	M1 for complete correct method to find the total number of girls eg 120 – 30 (=90) M1 for a complete correct method to find the number of girls who play Football and hockey eg 26 + 35 (=61) M1 for “90” – “61” A1 for identifying 29 as the answer **OR** M1 for a complete correct method to find the total number playing tennis M1 for a complete correct method to find the number of boys playing tennis M1 for “total for tennis” “boys playing tennis” A1 for identifying 29 as the answer

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Example diagram for Question 11:

Heights	Tally	Freq
$120 \leq h < 130$ $130 \leq h < 140$ $140 \leq h < 150$ $150 \leq h < 160$ etc		

Example diagram for Question 11:

Heights	Tally	Freq
120 - 129 130 - 139 140 - 149 150 - 159 etc		

Question 17 possible 2-way table:

	B	G	Tot
F	**10**	35	**45**
H	12	26	**38**
T	**8**	**29**	**37**
Tot	30	**90**	120

Question 17 possible 2-way table:

	F	H	T	Tot
B	**10**	12	**8**	30
G	35	26	**29**	**90**
Tot	**45**	**38**	**37**	120

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PAPER: 5MB1F_01			
Question		**Modification**	**Notes**
1		Just number given-no cards-wording	Standard mark scheme
4		Boxes in diagram –enlarged	Standard mark scheme
7		10.5 cm grid.	Standard mark scheme
9		Table moved around so that fridges are together with freezers underneath	Standard mark scheme
12	(a)(i) (a)(ii) (b)	Angles for Thai is 60degrees .Angle for Chinese is 150degrees	B1 for 58 – 62 B1 ft from their part (i) for their $\frac{60}{360}$ oe; do not accept decimals M1 ft for subtraction from 360° [=148-152] M1 ft for 360 ÷ 60 = 6º or "150" ÷ 6 A1 cao **Or** M1 ft for subtraction from 360° [=148-152] M1ft for using their 150 in $\frac{150}{360}\times 60$ A1 cao

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PAPER: 5MB1F_01			
Question		**Modification**	**Notes**
14		Stem and leaf diagram: horizontal lines inserted	Standard mark scheme
16		x-axis 2cm for 5. *y*- axis 2cm for 1	Standard mark scheme

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If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect canceling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.
Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

PMT

11 Linear equations
Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

12 Parts of questions
Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers
Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

PMT

PAPER: 1MA0_2F					
Question		Working	Answer	Mark	Notes
1	(a)		3502	1	B1 cao
	(b)		Two thousand and nineteen	1	B1cao
	(c)		7 tens	1	B1 for 7 tens or 70 accept in words
	(d)		6700	1	B1 cao
2	(i)		Hexagon	1	B1 for (regular) hexagon
	(ii)		Decagon	1	B1 for (regular) decagon
3	(a)		PK 340	1	B1 cao
	(b)		35	1	B1 cao
	(c)		25	2	M1 for 102 – 77 **or** 77 – 102 A1 cao accept – 25
4	(a)(i)		Acute	2	B1 for acute
	(ii)		65		B1 for 63 – 67
	(b)(i)		53	2	B1 cao
	(ii)		Reason		B1 for 'Angles on a straight line add up to 180°

PMT

PAPER: 1MA0_2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
5 (a)		1 hour 40 minutes	2	M1 for correct working shown to find the difference between 17 50 and 19 30 e.g. using a carry of 60 minutes in a take away or counting on from 17 50 to 19 30 A1 for 1 hr 40 mins or 100 mins
(b)		7	3	M1 for $2 \times 20 - 8.5$ (= 31.5) **or** $20 - 8.5$ (= 11.5) M1 (dep) for "31.5" ÷ 4.5 **or** (20 + "11.5") ÷ 4.5 **or** 7 × 4.5 oe (eg by addition/subtraction method) A1 cao
6 (a)(i)		25, 22	2	B1 cao
(ii)		Subtract 3		B1 for correct description Eg. 'subtract 3' **or** 'goes down by 3' oe **or** 'take-away 3' **or** -3 **or** $43 - 3n$ seen
(b)		23	2	M1 for +5 seen **or** for continuing sequence for at least 2 terms (condone one arithmetic error) **or** $5n - 17$ A1 cao
7 (a)		$\frac{5}{9}$	1	B1 for $\frac{5}{9}$ oe
(b)		3 squares shaded	1	B1 for any 3 squares shaded
(c)		80	2	M1 for $120 \div 3$ (= 40) **or** 2×120 (= 240) **or** $\frac{2}{3} \times 120$ oe A1 cao

PAPER: 1MA0_2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
*8		Correct chart or diagram	4	B1 for a key or suitable labels to identify bicycles and motorbikes or clear differentiation between categories B1 for 5 correct labels for days clearly in the appropriate place B1 for a diagram(s) or chart(s)(combined or separate) set up for comparison, correctly showing data for at least three days e.g. dual bar chart, line graphs, pie charts, pictograms, etc C1 fully correct diagram or chart to include all axes labelled.
9		1.9 km or 1900 m	3	M1 for 1.25 × 1000 (= 1250) **or** 650 ÷ 1000 (= 0.65) M1 for "1250" + 650 or 1.25 +"0.65" A1 for for 1.9 km or 1900 m
10		(12) 10 80 (27)	1 1	B1 cao B1 cao
11 (a) (b)		(8, 1) Coordinate shown	1 2	B1 cao B2 for N at (5, k) where $k \geq 6.2$) **or** (2, 7) **or** (8,7) (B1 for N at (5, k) where $k < 6.2$)
12 (a) (b) (c)		1 26 144	1 1 2	B1 cao B1 cao M1 for 16 × 9 A1 cao
13		eg. 18, 4, 5	3	M1 for two different factors of 40 M1 for 3 numbers where the sum lies between 20 and 30 **AND** (where one is 9 or 18 **or** two are different factors of 40 A1

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
14	(a)		2	1	B1 cao
	(b)		4	2	M1 for showing a clear intention to add all ten numbers **and** to divide by 10 A1 cao
	(c)		55	2	M1 for evidence of at least 4 attempts to multiply number of birds by frequency eg. 0×3 , 2×1 , 3×2 , 4×3 , 5×4 , 3×5 A1 cao
*15			34 or 33	4	M1 for one operation e.g. 12 × 4.5 (= 54) **or** 12 × 5 (= 60) **or** 4.5 × 5 (= 22.5) **or** ÷8 M1 for two operations e.g. 12 × 4.5 × 5 (= 270) **or** 12 × 4.5 ÷ 8 (= 6.75) **or** 4.5 × 5 ÷ 8 (= 2.8125) **or** 12 × 5 ÷ 8 (7.5) M1 for a complete method e.g. 12 × 4.5 × 5 ÷ 8 (=33.75) C1 for 34 accept 33 clearly identified from correct calculations and correct figures
16	(a)		Evens	1	B1 cao
			Certain	1	B1 cao
	(b)		4	2	M1 for 14 **or** $\frac{3+7}{n}=\frac{5}{7}$ **or** any fraction equivalent to $\frac{2}{7}$ or $\frac{5}{7}$ A1 cao
17			Triangle at (4, 2) (2, 2) (4, 5)	2	B2 for triangle at (4, 2) (2, 2) (4, 5) (B1 for correct reflection in the *x* axis or for a reflection in any line parallel to *y* axis)
18		80 litres ≈ 18 gallons or 16 gallons ≈ 72 litres	A with correct figures	3	M1 for reading from the graph eg. 8 gallons = 36 litres; 20 litres = 4.4 gallons M1 for a complete method to convert either 80 litres into gallons or 16 gallons into litres e.g. 80 litres = "4.4" × 4 gallons or 16 gallons = "36" × 2 litres A1 for car A with correct figures in range 17.5 –18.5 gallons or 64 – 72 litres

PAPER: 1MA0_2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
*19		Small with correct figures for comparison	4	M1 for one calculation e.g. 6.5 ÷ 30 (=0.216...) **or** 8.95 ÷ 40 (=0.22375) **or** 10.99 ÷ 50 (=0.2198) M1 for all three calculations e.g. of 6.5 ÷ 30 (=0.216...) **and** 8.95 ÷ 40 (=0.22375) **and** 10.99 ÷ 50 (=0.2198); A1 for 0.216... **and** 0.22375 **and** 0.2198... can be rounded or truncated as long as they remain different C1 (dep on M1) for conclusion ft from three comparable figures [could use different figures relating to 30, 40, 50] **OR** M1 for one calculation e.g 6.5 × 20 (=130) **or** 8.95 × 15 (=134.25) **or** 10.99 × 12 (=131.88) M1 for three calculations e.g. 6.5 × 20 (=130) **and** 8.95 × 15 (=134.25) **and** 10.99 × 12 (=131.88) A1 for 130 **and** 134.25 **and** 131.88 can be rounded or truncated as long as they remain different C1 (dep on M1) for conclusion ft from three comparable figures [or any other calculations leading to comparable figures e.g. cost of 600 plants or comparing small and medium and small and large e.g. 120 plants and 150 plants separately] **Or** M1 for one calculation e.g 30 ÷ 6.5 (= 4.615…) **or** 40 ÷ 8.95 (= 4.469…) **or** 50 ÷ 10.99 (= 4.549…) M1 for three calculations e.g. 30 ÷ 6.5 (= 4.615…) **and** 40 ÷ 8.05 (= 4.469…) **and** 50 ÷ 10.99 (= 4.549…) A1 for 4.615… **and** 4.469… **and** 4.549… can be rounded or truncated as long as they remain different C1 (dep on M1) for conclusion ft from three comparable figures [or any other calculations leading to comparable figures]
20 (i)		$x + 4$	1	B1 for $x + 4$ oe
(ii)		$2x$	1	B1 for $2x$ oe

PMT

PAPER: 1MA0_2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
21		7	4	M1 for 1800 × 36 **or** 1800 × 2.54 **or** 36 × 2.54 M1 for 1800 × 36 × 2.54 (=164 592) M1 (dep on M1) for a complete method e.g. 1800 × 36 × 2.54 ÷ 100 ÷ 245 (= 6.71...) A1 for 7 with correct working **OR** M1 for 245 × 100 (=24 500) M1 for "24500" ÷ 2.54 ÷ 36 (=267.93...) M1 for 1800 ÷ "267.93.." (=6.71...) A1 for 7 with correct working
22 (a)		34.81	1	B1 cao
(b)(i)		35.1606....	2	B1 for 35.1606(7977...)
(ii)		35.2		B1 ft from (i) provided (i) has more than one decimal place
23 (a)		9	1	B1 cao
(b)		5	1	B1 cao
(c)		17	2	M1 for clear intention to expand bracket or divide both sides by 2 as the first step eg. $2y - 2\times5 = 24$ **or** $y - 5 = 24 \div 2$ A1 for 17
(d)		$5(3p + 8)$	1	B1 cao

PMT

PAPER: 1MA0_2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
24		115	4	M1 for 360 − 4 × 25 (=260) M1 (dep) for "260"÷ 4 (= 65) M1 for 180 – "65" **or** (360 −2 × "65") ÷ 2 A1 for 115 with working **OR** M1 for 360 ÷ 4 (= 90) M1 (dep) for "90" − 25 (=65) M1 for 180 – "65" **or** (360 – 2 × "65") ÷ 2 A1 for 115 with working
25		6.45	5	M1 for 110 + 12 × 16.80 (= 311.6) M1 for 0.15 × 359 oe (= 53.85) M1 (dep on previous M1) for 359 – "53.85" oe (= 305.15) M1 (dep on M3) for "311.6" – "305.15" A1 for 6.45 from correct working
26		19	4	M1 for 130 − 96 (=34) M1 for 73 − 55 (=18) M1 for"34" − 9 – "18" + 12 A1cao **OR** M1 for. 96 − 55 − 12 (=29) M1 for 9 + "29" (=38) M1 for 130 − 73 – "38" A1 cao

PMT

PAPER: 1MA0_2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
27		440	2	M1 for 140 × π or 439 A1 for 439.6 – 440
*28		No with correct figure	3	M1 for a calculation which uses the Time × Speed = Distance relationship **OR** a conversion of units eg between hours & minutes or between mph & miles per min M1 for a calculation involving both of the above C1 for "no" with a correct calculation, with units, from working: 25.2 – 25.8 minutes, 30.1 – 30.8 miles, 69 – 69.3 mph Distance ÷ speed: 30 ÷ 70 (= 0.42 - 0.43); Distance ÷ time: 30 ÷ 26 (= 1.15…); Speed × time: = 70 × 26 (=1820 mins) Mph to miles/min 70 ÷ 60 (=1.16-1.67); Minutes to hours is 26 ÷ 60 (= 0.43…) **NB** 70 ÷ 26 × 30 as a single stage calculation gets 0 marks

Question 26:

	F	S	G	
W	12	55		96
M	**7**	**18**	9	**34**
	19	73		130

	F	S	G	
W	12	55	**29**	96
M			9	
	19	73	**38**	130

Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5º
Measurements of length: ±5 mm

PAPER: 1MA0_2F			
Question		**Modification**	**Notes**
Q2		Polygons labelled polygon (i) and polygon (ii).	Standard mark scheme
Q3		Table – 2nd line (Sonsang A220) and 'camera' column removed.	Standard mark scheme
Q4		Angle arms – 10cm long	Standard mark scheme
Q7		2cm squares. Shading is dotty.	Standard mark scheme
Q8		Top 2 rows and last column removed. 1½cm grid.	Standard mark scheme
Q10		Braille (i) and (ii) in empty boxes.	Standard mark scheme
Q11		2cm grid. *x* changed to filled in circles.	Standard mark scheme

PMT

PAPER: 1MA0_2F			
Question		**Modification**	**Notes**
Q12		1st line 'square grid' instead of 'centimetre grid'. 2cm grid. Shading is dotty.	Standard mark scheme
	(b)	insert (Each square on the grid represents a one centimetre square).	Standard mark scheme
Q14	(c)	Frequency column widened to allow working space.	Standard mark scheme
Q17		2cm grid. Shading is dotty.	Standard mark scheme
Q18		2cm grid.	Standard mark scheme
Q24		*a* changed to *x*. Shading is dotty. MLP and braille.	Standard mark scheme

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Mark Scheme (Results)

November 2013

Pearson Edexcel GCSE
In Mathematics Modular (2MB01)
Unit 1: (5MB1F_01) Foundation (Calculator)

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November 2013
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NOTES ON MARKING PRINCIPLES

1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

2 Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will indicate within the table where, and which strands of QWC, are being assessed. The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labeling conventions.

ii) *select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate.*
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
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It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.
Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

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Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
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If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
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12 Parts of questions

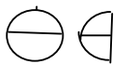
Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers

Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

PMT

PAPER: 5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		24	1	B1 cao
	(b)		22	2	M1 for 8 + 8 + 6 oe or “24” − 2 A1 cao
	(c)			1	B1 for drawing a circle showing 4 quadrants and a semicircle showing 2 sectors
2	(a)		evens	1	B1 cao
	(b)		unlikely	1	B1 cao
	(c)		1 marked	1	B1 for cross marked at 1
	(d)		colours	1	B1 for 2 or 3 additional counters marked red
*3	(a)		diagram or chart	4	B1 for a key or suitable labels to identify Harry and Shamus B1 for horizontal or vertical axis labelled B1 for at least 3 correct plots C1 for fully correct diagram(s) or charts(s)
	(b)		comparisons	2	B1, B1 ft for any two correct comparisons.

PMT

$\frac{1}{4}$

PAPER: 5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
4			7.31	4	M1 for a correct method to work out the total cost (= 16.92) M1 for a correct method to find $\frac{1}{4}$ of their total cost (or $\frac{3}{4}$) M1 (dep on at least M1) for subtraction from £20 A1 cao
5	(a)		2	2	M1 for attempt to order or two middle unordered numbers selected A1 cao
	(b)		4	2	M1 for 5 – 1 or 1 – 5 or 1 to 5 A1 cao
	(c)		18 11 7 3 1	1	B1 cao
	(d)		40	1	B1 for 40 or ft their frequencies
	(e)	18×0 + 11×1 + 7×2 + 3×3 + 1×4 =	38	2	M1 for Σ *fx* A1 cao [SC: no working- B1 for 56]
*6			No	2	M1 for a relevant calculation, eg 60 +30 or 95 ÷ 60 (= 1.58…) or sight of 90 C1 (dep on M1) for correct statement with correct calculations
7	(a)		(A1), A2, A3 B1, B2, B3 C1,C2 C3	2	B2 for a fully correct list (B1 for 5 or 6 more correct. Ignore repeats)
	(b)		$\frac{1}{9}$	1	B1 for $\frac{1}{9}$ oe or ft part (a)

PMT

PAPER: 5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
8	(a)		$\frac{1}{4}$	1	B1 for $\frac{1}{4}$ oe
	(b)		$2x°$	1	B1 for $2x°$ oe (condone omission of °)
	(c)		20	2	M1 for $150 \div 360 \times 48$ oe or $48 \div 4 + \frac{2}{3} \times (48 \div 4)$ oe A1 cao
*9			Investment B	4	M1 for 3×12×5 (= 180) M1 for 2500 × 3 × 2.5 ÷ 100 (= £187.50) A1 for (£)180 and (£)187.5(0) or (£)2680 and (£)2687.5(0) C1 (dep on M2) for correct conclusion for their figures Alternative method: M1 for 12 × 5 = 60 M1 for '60'÷ 2500 × 100 A1 for 2.4(%) C1 (dep on M2) for correct conclusion for their figures NB: accept comparable figures for different time periods SC: If compound interest used can score M1 M0 A0 C1 ft

PMT

PAPER: 5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
10	(a)	<table><tr><td>4</td><td>**15**</td><td>**11**</td><td>**30**</td></tr><tr><td>**12**</td><td>5</td><td>**10**</td><td>27</td></tr><tr><td>**16**</td><td>20</td><td>21</td><td>57</td></tr></table>	complete 2-way table	3	B3 cao (B2 for 4 or 5 correct entries B1 for 2 or 3 correct entries)
	(b)		5	1	B1 cao
	(c)		19	1	B1 for 19 or ft 4 + “15” or 30 – “11”
11	(a)		question + response boxes	2	B1 for appropriate question with time period B1 for at least 3 boxes that are either non-overlapping but not necessarily exhaustive, or exhaustive but not necessarily non-overlapping NB time period and/or unit of time may appear in either the question or with the response boxes; award a maximum of B1 if no units
	(b)		two correct reasons	2	B2 for 2 correct reasons from, eg only girls, (all about) the same age, same year group, same school (B1 for 1 correct reason)
12	(a)		$0.75 - x$	2	M1 for $1 - 0.25 + x$ or $0.25 + x$ A1 or $0.75 - x$ oe
	(b)		60	2	M1 for 0.25×240 oe A1 cao

PMT

PAPER: 5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
13	(a)		Positive correlation	1	B1 for positive correlation or the greater the rainfall the more umbrellas sold oe
	(b)		52 – 58	2	M1 for a single straight line segment with positive gradient that could be used as a line of best fit or an indication on the diagram from 28 on the *x*-axis A1 for an answer in the range of 52 – 58
*14		2 × 462 + 251 = 1175 0.95×1175 = 1116.25 2 × 485 + 218 = 1188 1188 – 75 = 1113.00	Jetstream	5	M1for identifying correct costs for either Highway Airlines or Jetstream Airlines M1 for attempt to calculate the costs for the family eg 2× “462” “251” or 2 × “485” + “218” M1 for a correct method to work out the discount for one company eg 0.95 × “1175” or 0.05 × “1175” or “1188” – 75 A1 for (£)1116.25 and (£)1113.00 C1 (dep on M1) for calculations clearly identified with each airline and correct decision from their figures

Modifications to the mark scheme for Modified Large Print (MLP) papers.

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Measurements of length: ±5 mm

PAPER:			
Question		**Modification**	**Notes**
Q1		Circles are 2.5cm diameter. Key at top of pictogram.	Standard mark scheme
Q2	(c)	Probability scale is 16cm long.	Standard mark scheme
Q3		Grid is 2cm squares.	Standard mark scheme
Q4		No pictures just information given.	Standard mark scheme
Q10		Braille table has (i) to (vi) in spaces. 4 (i) (vi) (ii) (iv) 5 (v) 27 (iii) 2 21 57	Standard mark scheme
Q13		*x* axis 2cm for 5. *y* axis 2cm for 10. *x* changed to filled in circles. Right axis labelled.	Standard mark scheme
	(b)	Rainfall changed from 28mm to 30mm.	Standard mark scheme
Q14		On both tables top 2 rows and bottom 2 rows removed.	Standard mark scheme

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Mark Scheme (Results)

Summer 2014

Pearson Edexcel GCSE
In Mathematics A (1MA0)
Foundation (Non-Calculator) Paper 1F

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Summer 2014
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NOTES ON MARKING PRINCIPLES

1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

2 Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will indicate within the table where, and which strands of QWC, are being assessed. The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labelling conventions.

ii) *select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect cancelling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.
Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

11 Linear equations
Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

12 Parts of questions
Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

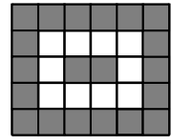
13 Range of answers
Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		25, 52, 55, 102, 120	1	B1 cao
	(b)		–5, –2, 0, 3, 6	1	B1 cao
	(c)		0.06, 0.6, 0.603, 0.63, 0.633	1	B1 cao
2	(a)		red	1	B1 cao
	(b)		unlikely	1	B1 cao
	(c)		impossible	1	B1 cao
3			55	3	M1 for 29 + 17 + 19 (=65) or 34 + 43 + 43 (=120) M1 for "120" – "65" A1 cao OR M1 for 34 – 29 (=5) or 43 – 17 (=26) or 43 – 19 (=24) M1 for "5" + "26" + "24" A1 cao OR M1 for three other consistent differences found M1 adding their differences A1 cao

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
4	(a)		19	1	B1 cao
	(b)		203	1	B1cao
	(c)		Explanation	1	B1 for any correct reason, e.g. terms are all odd but 372 is even or use of *n*th term $4n - 1$ or not 1 less than a multiple of 4
5	(a)		3	1	B1 for 3, accept – 3
	(b)		1	2	M1 for evidence of adding all 7 or all 6 non zero temperatures **and** dividing by 7 A1 cao
6	(a)		0908	1	B1 cao
	(b)		15	1	B1 cao
	(c)		57	1	B1 cao
7	(a)		12	2	M1 for $48 \div 4$ or $48 \times \frac{1}{4}$ oe A1 cao
	(b)		250	3	B1 for 750 M1 for "750" ÷ 3 oe A1 cao

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
8	(a)		Pentagon	1	B1 cao
	(b)		Parallel lines marked	1	B1 cao
	(c)		Acute	1	B1 cao
	(d)		10 cm^2	2	B1 for 10 B1 (indep) for cm^2
*9			Diagram or chart	4	M1 for key or suitable labels to identify Majorca and Crete M1 for 5 correct month labels OR a linear scale M1 for diagram or chart (combined or separate) set up for comparison, correctly showing data for at least three months C1 for fully correct diagram or chart to include all axes correctly scaled and labelled
10	(a)		2	4	M1 for 20 × 2 + 30 (=70) M1 for 20 × 1.8 + 32 (=68) M1 (dep on M1) for "70" – "68" A1 cao
	(b)		40	3	M1 for 110 – 30 ÷ 2 or 110 = ? × 2 + 30 or 110 – 30 or ÷ 2 seen as second operation M1 for "(110 – 30)" ÷ 2 A1 cao NB accept reverse flowcharts for inverse operations SC if exact rule used: B2 for "(110 – 32)" ÷ 1.8

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
11	(a)		$\frac{7}{15}$	2	M1 for $\frac{14}{30}$ oe A1 cao
	(b)		2	1	B1 cao
	(c)			2	M1 for at least 3 of the 5 rows correct A1 cao SC if M0 scored: B1 for a symmetrical pattern with more than 6 squares shaded but not all shaded.
12	(a)		$3ac$	1	B1 cao
	(b)		p^3	1	B1 cao
	(c)		$8x - 7y$	2	M1 for $8x$ or $\pm 7y$ A1 cao

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PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
13	(a)		Five thousand six hundred	1	B1 cao
	(b)		Rectangle drawn	2	B2 for fully correct diagram (B1 for one line of correct length within a rectangle)
	(c)		13	3	M1 for the length of one side of rectangle, e.g. 44 (mm) or 27 (mm) ±2mm (allow use of cm) M1 for 6.5(0) or size 1 clearly indicated A1 for 13(.00)
	(d)		Working shown and compared to 8 weeks	2	M1 for 13.50 × 8 or 13.50 × 7 oe or repeated subtraction of 13.50 from 100 at least 7 times A1 for arriving at a correct figure they can compare with £100 in one step eg 108, 94.5(0), 5.5(0) or -8 OR M1 for 100 ÷ 8 A1 for 12.5(0) OR M1 100 ÷ 13.50 = 7.4 A1 for 7

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
14	(a)		60	2	M1 for 300 ÷ 5 or 3 ÷ 5 oe A1 cao
	(b)		25p or £0.25	3	M1 for 100 ÷ 5 (= 20) M1 for "20" ÷ 80 or "20" × 100 ÷ 80 A1 for 25p or £0.25 OR M1 for 80 × 5 (= 400) M1 for 100 ÷ "400" or 100 × 100 ÷ "400" A1 for 25p or £0.25 OR M1 for 100 ÷ 80 (= 1.25) M1 for "1.25" ÷ 5 or "1.25" × 100 ÷ 5 A1 for 25p or £0.25 SC B2 for answer of 25 or 0.25
15			200	3	M1 for 20 × 40 × 20 (=16000) or 5 × 8 × 2 (=80) M1 (dep) for "16000" ÷ "80" A1 cao OR M1 attempt one division (eg 20 ÷ 5), may be implied by marks or number on one edge of diagram M1 (dep) for "(20 ÷ 5)" × "(40 ÷ 8)" × "(20 ÷ 2)" A1 cao

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*16		base angles of isosceles triangle are equal **and** angles on a straight line add up to 180° **and** angles in a triangle add up to 180° OR base angles of isosceles triangle are equal **and** angles in a triangle add up to 180° OR base angles of isosceles triangle are equal **and** exterior angle of a triangle is equal to the sum of the interior opposite angles	60° with reasons	4	B1 for angle *ADB* =25 can be shown on the diagram M1 for a complete method to find *x* C2 (dep 2 previous marks) for 60 with full reasoning seen (C1 (dep 1 previous mark) for one reason) QWC: Reasons must be appropriate to the method shown.
17			168, 72, 120	4	M1 for evidence of method for at least one angle (could be implied by working or one correct angle on pie chart or in table) A2 for all angles drawn correctly ±2° (A1 for at least one angle drawn correctly or all angles correct in table) B1 for sectors labelled with results (dependent on at least one angle drawn correctly and exactly three sectors)

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
18	(a)		-7	2	M1 for 3×-5 (= -15) **and** 4×2 (=8) A1 cao
	(b)(i)		$10p$	2	B1 for $10p$ oe
	(b)(ii)		$10p - 7$		B1ft for "$10p$" – 7 Note "$10p$" MUST be an algebraic expression
19			$\frac{4}{15}$	2	M1 for attempting to use a suitable common denominator with at least one of the two fractions correct A1 for $\frac{4}{15}$ oe
20		<table><tr><td></td><td>Sq</td><td>G</td><td>S</td><td>Tot</td></tr><tr><td>F</td><td>**2**</td><td>**4**</td><td>**15**</td><td>21</td></tr><tr><td>M</td><td>6</td><td>**14**</td><td>9</td><td>**29**</td></tr><tr><td>Tot</td><td>8</td><td>18</td><td>**24**</td><td>50</td></tr></table>	4	4	M1 for a correct first step which results in a value that could be in the table: eg. 50 – 18 – 8 (= 24) or 50 – 21 (= 29) or 8 – 6 (= 2) M1 for correct method to find a second value that could be in the table using their first value eg "29"-9-6 (=14) or "24"-9 (=15) M1 for a fully correct and complete method. A1 cao
21			25.60	4	M1 for a correct method to find $\frac{1}{3}$ of 24 (=8) or $\frac{2}{3}$ of 24 (=16) M1 for a correct method to find 60% (= 7.2) or 40% (= 4.8) of 12 or 60% (= 14.4) or 40% (= 9.6) of 24 M1 (dep on at least M1) for a method to find the sum of their discounted adult ticket + 2 × their discounted child ticket A1 25.6(0)
22			Question given	2	B1 for a suitable question which includes a time frame (the time frame could appear with the response boxes) B1 for at least 3 non-overlapping exhaustive response boxes with no use of inequality symbols

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
23	(a)		$2m^2 + 6m$	1	B1 cao
	(b)		$3xy(y - 2)$	2	B2 for $3xy(y - 2)$ (B1 for $3x(y^2 - 2y)$ or $3y(xy - 2x)$ or $xy(3y - 6)$ or $3xy$(a two term algebraic expression))
*24			3	4	M1 for attempt to calculate at least one area eg 10×7 (=70) or 16×10 (=160) M1 for a method to find the total area (=124) M1 (dep on M1) for "124" ÷ 36 C1 (dep on M3) for 3 (pigs) clearly identified and supported by correct calculations Or M1 for an area of 36m² drawn with dimensions shown M1 for 3 areas of 36m² drawn with dimensions shown M1 for method to find the area left (=16) C1 (dep on M3) for 3 (pigs) clearly identified and supported by correct calculations
25			Shape drawn	2	B2 for shape with vertices at (0, –1), (–1, –3), (–2, –3), (–2, –1) (B1 for rotation of 180° about the wrong centre)

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*26		1.18 ÷ 4 = 0.295 (118 ÷ 4 = 29.5) 1.74 ÷ 6 = 0.29 (174 ÷ 6 = 29) 1.18 ÷ 2 = 0.59 1.74 ÷ 3 = 0.58 1.74 × 4 = 6.96 1.18 × 6 = 7.08 1.74 × 2 = 3.48 1.18 × 3 = 3.54 1.18÷2×3=1.77 1.74÷3×2=1.16 4÷1.18=3.3(....) 6÷1.74=3.4(…)	6 pints	3	M1 for division of price by quantity for both bottles or division of quantity by price for both bottles or a complete method to find the price of the same quantity of milk. A1 for two correct values that could be used for a comparison C1 ft (dep on M1) for comparison of their values with a correct conclusion.

Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5°
Measurements of length: ±5 mm

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
Q07		scales are simplified	Standard mark scheme
Q08	(a)	dotted grid kept but made a 2 cm grid	Standard mark scheme
Q08	(d)	2 cm solid grid. Wording added “Each square on the grid represents a one centimetre square”.	Standard mark scheme
Q09		1 ½ cm grid. 14 x 14 squares	Standard mark scheme

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PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
Q11	(a)	2 cm squares – dotty shading	Standard mark scheme
	(b)	2 cm squares – dotty shading – same as part (a). A shape is provided.	Standard mark scheme
	(c)	2cm squares – dotty shading	Standard mark scheme
Q13		Table size 1: 60mm x 20mm size 4: 90mm x 120mm	
	(b)	Changed to 90mm by 120mm rectangle	Apply mark scheme to the drawing of this size of rectangle
Q13	(c)	The box for David's advert is 60mm by 20mm – no writing inside	Standard mark scheme
Q15		2 models as well as a diagram	Standard mark scheme

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PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
Q17		Frequencies changed: 25, 15, 20 Pie chart 9cm radius marked off in 10 degree sections on the circumference.	Angles are now 150°, 90°, 120°
Q18	(a)	x changed to e, y changed to f	Standard mark scheme
Q24		Braille only: diagram labelled A – F clockwise from the top left	Standard mark scheme

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November 2014
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2 Mark schemes should be applied positively.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Note that in some cases a correct answer alone will not score marks unless supported by working; these situations are made clear in the mark scheme. Examiners should be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will award marks for the quality of written communication (QWC).
The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labelling conventions.

ii*) select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Partial answers shown (usually indicated in the ms by brackets) can be awarded the method mark associated with it (implied).
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks; transcription errors may also gain some credit. Send any such responses to review for the Team Leader to consider.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect cancelling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

Linear equations

Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded (embedded answers).

12 Parts of questions

Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers

Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

14 The detailed notes in the mark scheme, and in practice/training material for examiners, should be taken as precedents over the above notes.

Guidance on the use of codes within this mark scheme
M1 – method mark for appropriate method in the context of the question A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		Lhotse	1	B1 cao
	(b)		8200	1	B1 cao
	(c)		Seven thousand four hundred and twenty-eight	1	B1 for any unambiguous answer
	(d)		8051	1	B1 cao
2	(a)		4,8,3,3,2	2	M1 for at least 2 tallies or 2 frequencies correct A1 for 5 correct frequencies
	(b)		correct graph	3	M1 for bar chart or other suitable chart with at least 2 correct frequencies drawn for their scale (ft from (a)) M1 for all bars labelled and vertical axis correctly scaled A1 for accurately representing their data, with all labels, ft from (a)
3	(a)		56 000	1	B1 cao
	(b)		276	1	B1 cao
	(c)		6	1	B1 cao
	(d)		29	1	B1 cao
	(e)		13	1	B1 cao

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
4			3	3	M1 for attempt to find number of bags needed eg 254 ÷ 20 oe (= 12.7) **or** 12 **or** 13 M1 (dep) for "254 ÷ 20" ÷ 5 oe (= 2.4) A1 cao **OR** M1 for 5 × 20 (=100) M1 (dep) for intention to find how many "100" in 254 (= 2.54) A1 cao
5	(a)		B or C	1	B1 for B **or** C **or** B and C
	(b)		G, E	2	B1 for G; B1 for E
	(c)		Hexagon	1	B1 cao
	(d)		Parallelogram	1	B1 cao
6	(a)		$3m$	1	B1 cao
	(b)		$7e$	1	B1 cao
	(c)		$15g$	1	B1 cao
7	(a)		31	2	M1 for 3 × 5 + 2 × 8 **or** 15 and 16 A1 cao
	(b)		$6x + 8y$	2	M1 for $6x$ **or** $8y$ A1 for $6x + 8y$ oe as final answer

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*8		Tables-R-Us 120 + (120 + 2 × 40) = 320 Fred's Furniture 120 + (32 × 6) = 312 Tables 'n Chairs 120 + (3 × 70) = 330	Fred's Furniture with working	4	M1 for correct method to find total cost of chairs (and table) for at least one shop M1 for correct method to find total cost of chairs (and table) for at least two shops A1 for 3 comparable totals (eg. chairs £200, £192, £210 **or** table and chairs £320, £312, £330) C1 (dep on M1) ft for correct statement with shop name from comparable figures
9			48	2	M1 for method to find 15% of 320 A1 cao
10	(a)		5	1	B1 cao
	(b)		evens	1	B1 cao
	(c)		$\frac{2}{6}$ oe	2	M1 for $\frac{a}{6}$ where $a < 6$ **or** $\frac{2}{b}$ where $b > 2$ A1 for $\frac{2}{6}$ oe
11	*(a)		No with working	2	M1 for 19.5 + 22.8 (= 42.3) **or** 40 − 19.5 − 22.8 (= −2.3) **or** 22 + 19 (= 41) C1 for statement with No and 42.3 **or** ±2.3 **or** 41 seen
	(b)		12 40	3	M1 for correct start eg. addition of two times **or** subtraction of one time from 1430 M1 for a complete method A1 for 12 40 (pm)

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
12			126 or 176	4	M1 for correct unit conversion of 2 m or 3 m or 20 cm M1 for method to find number in width or number in length **or** 14 or 9 or 16 or 11 M1 (dep on M1) for "number in length" × "number in width" eg 14 × 9 eg 16 × 11 A1 for 126 or 176
*13			Amsterdam with figures	3	B1 for a correct conversion from miles to km or km to miles eg 8 km = 5 miles eg 28 miles = 44 km M1 for a correct method to convert 280 miles to km or 500 km to miles **or** 420 – 460 (km) **or** 300 − 320 (miles) C1 (dep on M1) for statement with correct conclusion and correct conversions (420 – 460 km or 300 – 320 miles)
14			correct shape	2	M1 for at least 2 correctly enlarged sides A1 for correct shape **SC:** B1 for a fully correct enlargement scale factor 2 or 4
15	(a)		18	1	B1 cao
	(b)		56	1	B1 cao
	(c)		33	2	M1 for 23 and 56 identified A1 cao

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*16			No with reason	3	M1 for 17, 20 .**or** + 3 **or** $3n + 2$ M1 for method to show that 34 is not in the sequence eg continue sequence to at least 32 eg attempt to solve $3n + 2 = 34$ C1 (dep on M2) for statement with conclusion eg No with 32, 35 shown eg $n = 32 \div 3$ which is not a whole number
17			700 cm^3	3	M1 for $20 \times 5 \times 7$ A1 for 700 B1 (indep) for cm^3
18			4	3	B1 for 11.8 − 12.2 (cm) or 1180 − 1220 (km) M1 for "12" × 100 ÷ 300 oe A1 for 3.9 – 4.1 from correct figures or ft from "12" × 100 ÷ 300 oe
19			1340	4	M1 for 500 × 4 (= 2000) M1 for 960 – 300 (= 660) or "2000" + 300 (= 2300) or "2000" – 960 (= 1040) M1 (dep on M2) for a fully correct method eg "2000" – "660" or "2300" – "960" or "1040" + 300 A1 cao

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
20	(a)		$\frac{5}{12}$	2	M1 for $\frac{150}{360}$ or equivalent fraction A1 cao
	(b)		42	2	M1 for 60 ÷ 12 (= 5) **or** 210 ÷ 60 (= 3.5) oe A1 cao
	(c)		not enough information	1	B1 for 'not enough information' ticked **and** appropriate explanation given
21			25	4	M1 for 600 ÷ 4 (= 150) M1 for 4500 ÷ "150" (= 30) M1 for 750 ÷ "30" A1 for 25 with supporting working **OR** M1 for 4500 ÷ 750 (= 6) M1 for 600 ÷ 4 (= 150) or 600 ÷ "6" (= 100) M1 for "150" ÷ "6" or "100" ÷ 4 A1 for 25 with supporting working **OR** M1 for 4500 ÷ 750 (= 6) or 750 ÷ 4500 (= $\frac{1}{6}$) M1 for $\frac{1}{4}\times"\frac{1}{6}"$ $\left(=\frac{1}{24}\right)$ M1 for $"\frac{1}{24}"\times 600$ A1 for 25 with supporting working

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*22			130 + correct reasons	4	M1 for angle *BFG* = 65 (may be seen on diagram) M1 (dep) for correct method to calculate *x* eg (*x* =) 65 + 65 (= 130) **or** (*x* =) 180 − (180 − 2 × 65) (= 130) C2 for *x* =130 **and** full appropriate reasons related to method shown (C1 (dep on M1) for any one appropriate reason related to method shown) eg alternate angles are equal ; base angles in an isosceles triangle are equal; angles in a triangle add up to 180°; angles on a straight line add up to 180°; exterior angle of triangle = sum of two interior opposite angles co-interior angles (allied angles) add up to 180°
23	(a)		2 reasons	2	B2 for two different reasons (B1 for 1 reason) eg No units (of distance) eg Overlapping intervals (2 and/or 3 in two boxes) eg Missing box (no box for more than 6 (km/miles) or 'other' or 4.5 (km/miles))
	(b)		Question	2	B1 for a suitable question which includes a time frame (time frame could appear with response boxes) B1 for at least 3relevant non-overlapping **and** exhaustive response boxes [Do not allow inequalities in response boxes]

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
24	(a)		$e(3e + 5)$	1	B1 for $e(3e + 5)$
	(b)		4	3	M1 for intention to expand brackets eg $7k - 21$ **or** division of all terms on RHS by 7 as a first step M1 for correct method to isolate terms in k in an equation A1 cao
	(c)		$a = 2f - 1$	2	M1 for a correct first step eg intention to multiply both sides by 2 A1 cao
25			$2 \times 2 \times 3 \times 3 \times 5$	3	M1 for continual prime factorisation (at least two consecutive steps correct) **or** at least two stages of a factor tree correct M1 for a fully correct factor tree **or** list 2, 2, 3, 3, 5 A1 for $2 \times 2 \times 3 \times 3 \times 5$ or $2^2 \times 3^2 \times 5$
26			9	4	M1 for method to find the area of one rectangle eg 15×8 (=120) or 15×11 (=165) M1 (dep) for subtraction from/by given area eg 138 − "120" (=18) or "165" – 138 (=27) M1 for final step from complete method shown eg 15 − "18"÷ 3 or for "27" ÷ 3 A1 cao **OR** M1 for a correct expression for the area of one rectangle eg $(8 + 3) \times (15 - x)$ or $8 \times x$ M1 (dep) for a correct equation eg $(8 + 3) \times (15 - x) + 8 \times x = 138$ M1 for correct method to isolate x eg $3x = 27$ A1 cao

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PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
1		Take out Jannu	
2	(b)	Table layout modified 2 cm grid provided with 14 squares across and 12 squares up Space on left and at the bottom for labeling	
5		Shapes H and I removed	
7		*a* changed to *e* *c* changed to *f*	
10		Spinner straightened up,● at centre to represent spike	
13		2 cm grid provided	
14		1½ cm grid provided Enlargement given Question reversed – 'Describe fully the transformation that maps Shape A onto Shape B	

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PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
15		Horizontal lines inserted to separate rows	
17		Model provided	

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Mark Scheme (Results)

Summer 2015

Pearson Edexcel GCSE
In Mathematics A (1MA0)
Foundation (Calculator) Paper 2F

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Summer 2015
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5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

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The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labelling conventions.

ii) *select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Partial answers shown (usually indicated in the ms by brackets) can be awarded the method mark associated with it (implied).
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If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

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Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect cancelling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.

10 Probability

Probability answers must be given as fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

Linear equations

Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded (embedded answers).

12 Parts of questions

Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers

Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

14 The detailed notes in the mark scheme, and in practice/training material for examiners, should be taken as precedents over the above notes.

Guidance on the use of codes within this mark scheme
M1 – method mark for appropriate method in the context of the question A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		17.1	1	B1 cao
	(b)		1.3	1	B1 cao
	(c)		10.24	1	B1 cao
2	(a)		Hexagon	1	B1 cao
	(b)		8	1	B1 cao
3		$4 \times 17 + 3$	71	2	M1 for a complete method seen or 68 given as the answer A1 cao
*4			D C F S R 7 5 3 1 4 Suitable chart or diagram	3	M1 bar chart or other suitable chart with sections for at least 2 pets M1 sections for each pet and vertical axis correctly scaled / 2 correct frequencies C1 fully correct chart or diagram, including correct frequencies and all labels
5	(a)		$5e$	1	B1 cao
	(b)		$7gh$	1	B1 cao
	(c)		$a + 6d$	2	M1 for a or $6d$ A1 cao

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PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
6			9	3	M1 for two correct operations seen or implied M1 for a complete method A1 cao OR M1 for 13 + 5 (= 18) and 4 + 7 (= 11) M1 for a complete method A1
7	(a)(i)		95	2	B1 cao
	(ii)		Reason		B1 angles in a triangle add to 180°
	(b)		Drawing	3	B3 for a fully correct triangle (B2 for a triangle with 2 of the 3 aspects: line of 8cm; angle of 40º; angle of 45º) (B1 for 1 of the 3 aspects)
8	(a)		15 minutes	2	B1 15 B1 (indep) minutes
	(b)		3 05	2	M1 for intention to add 10 minutes and 55 minutes to 2 o'clock A1 3 05 oe
	*(c)		No with reason	2	M1 for a method to add 75 minutes to '3 05' or to work out the difference between '3 05' and 4 pm or to subtract 75 minutes from 4 pm C1(dep M1) for conclusion based on appropriate working and correct time calculations, ft from (b)

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PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
9	(a)		12.5	1	B1 cao
	(b)		500	2	M1 for a complete method to find $\frac{5}{6}$ of 600 or 600 ÷ 6 (= 100) A1 cao
10	(a)		$\frac{68}{105}$	1	B1 oe
	(b)		22	2	M1 for 105 – 15 – 68 oe A1 cao
	(c)		14.3	2	M1 15 ÷ 105 × 100 oe A1 for answer in range14.2 – 14.3
11	(a)		300	1	B1 cao
	(b)		100	3	M1 for intention to find the total number of adults or the total number of children M1(dep) for subtracting the two totals A1 for answer in range 90 to 110 OR M1 for intention to find the difference between the number of adults and the number of children for two months M1 (dep) for correctly processing all the differences A1 for answer in range 90 to 110

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*12			£52.74 or 5274p	4	M1 for subtracting to find the units used (= 293) M1 for '293' × 18 or '293' × 0.18 A1 for 52.74 or 5274 C1 (dep M2) for identifying their answer with the correct monetary units OR M1 for 2968 × 18 (= 53424) or 2675 × 18 (= 48150) or 2968 × 0.18 (= 534.24) or 2675 × 0.18 (= 481.50) M1 for subtracting their two costs (consistent in pence or pounds) A1 for 52.74 or 5274 C1 (dep M2) for identifying their answer with the correct monetary units
13	(a)(i)		19	2	B1 cao
	(ii)		Reason		B1 explanation, e.g. add 4 each time
	(b)		43	1	B1 cao
	(c)		Yes with reason	1	B1 reason eg 1 less than 80 and 80 is a multiple of 4, or generate series to 79, or 79 is the 20th term, oe

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
14	(a)		12	1	B1 cao
	(b)		6	2	M1 for 18 –12 or 12 –18 or 12 to 18 A1 cao
	(c)		15	2	M1 for listing the numbers in order or identifying the middle two numbers as 15 or an answer of 14 A1 cao
	(d)	174÷12	14.5	2	M1 for adding the numbers and dividing by 12 A1 cao
*15			65 km is not enough	4	M1 for intention to add the four distances M1 for adding with consistent and correct use of units A1 65(km) oe [can work in other units eg metres] C1 (dep on M2) correct conclusion comparing their figure to 70 with supporting working eg 18.2+14.25+20.5+12.05 = 65km or 18+14+20+12 = 64; 0.2+0.25+0.5+0.05 = 1; 64+1 = 65km
16			Suitable data collection sheet	3	B3 for a table with all 3 aspects: column/row heading ‘colour’ or list of at least three colours column/row heading ‘tally’ or tally marks column/row heading ‘frequency’ or totals oe (B2 for a table with 2 of the 3 aspects) (B1 for a table with 1 of the 3 aspects) NB: Do not accept questionnaires or graphs

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
17			$T = 6d + 15f$	3	M1 for $6d$ or $15f$ or T = a linear expression in d and/or f M1 for $6d + 15f$ oe or $T = 6d$ (+ kf) oe or $T = 15f$ (+ kd) A1 $T = 6d + 15f$ oe
18	(a)	2,5	2 or 5	1	B1 cao
	(b)	1, 4, 9, 16 1 + 4 + 16	1, 4, 16	2	M1 for identifying at least 2 different square numbers from the list A1 cao
19	(a)		–0.5	2	M1 for intention to subtract 19 from both sides or divide all terms by 8 as a first step A1 for –0.5 oe
	(b)		3	2	M1 for a correct operation to collect the c terms or the number terms on one side of the equation e.g. $2c – c + 5 = 8$, $2c + 5 – 5 = c + 8 – 5$ A1 cao
20			4	3	M1 for method to find 6% of 2000 (= 120) M1 (dep) for 480 ÷ '120' or for repeated addition of '120' to 480 A1 cao
21			45	4	M1 for finding the price of 1 kg or 0.5 kg of oranges M1 for using their value to find the price of 4.5 kg of oranges M1 (dep M2) for a complete method to find the price of 1 kg of apples A1 oe

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
22	(a)		$\frac{1}{30}$	1	B1 oe
	(b)		$\frac{3}{10}$	2	M1 for method to sum number of white chocolates, eg 4 + 4 + 1 (= 9) A1 $\frac{3}{10}$ or $\frac{9}{30}$ oe
	(c)		0.48	2	M1 for 1 – (0.35 + 0.17) oe A1 0.48 oe
*23		1155 ÷ 15 = 77 $x + 2x + x – 7 = 77$ $4x – 7 = 77$ $4x = 84$ $x = 21$ OR $15x + (15 \times 2x) + 15(x – 7)$ $=1155$ $60x – 105 = 1155$ $60x = 1260$ $x = 21$	Redlands 21 St Samuels 42 Francis Long 14	5	M1 for $2x$ or $x–7$ M1 for 1155 ÷ 15 (= 77) M1 (dep M2) for equation summing their three expressions to '77' A1 for 21,42 and 14 C1 for fully correct answer with correct labels OR M1 an expression for the cost of the pupils from Redlands M1 for expression for the cost of the pupils from either St Samuels or Francis Long M1 (dep M2) for equation summing their three expressions to 1155 A1 for 21,42 and 14 C1 for fully correct answer with correct labels
24			Loci drawn	3	B1 line parallel to *BC* and 3 cm from *BC* B1 arc drawn centre *C* with radius 4 cm B1 ft for shading a region below their horizontal line **and** inside their arc

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*25			No supported by working	4	M1 for π × 7 (= 21.9 to 22) or π × 7 × 2.54 (= 55.5 to 56) M1 (dep) for a complete method that could lead to two figures that are comparable e.g. π × 7 × 2.54; π × 7 and 50 ÷ 2.54 A1 for correct comparable figures e.g. 55.5 to 56 (cm); 21.9 to 22 (in) and 19.6 to 19.7 (in) C1 (dep M2) for a correct conclusion based on their comparable figures OR M1 for 50 ÷ π (= 15.9 to 15.92) or 50 ÷ 2.54π (= 6.26 to 6.27) M1 (dep) for a complete method that could lead to two figures that are comparable e.g. (50 ÷ π) ÷ 2.54; 50 ÷ π and 7 × 2.54 A1 for correct comparable figures e.g. 6.26 to 6.27 (in); 15.9 to 15.92 (cm) and 17.7 to 17.8 (cm) C1 (dep M2) for a correct conclusion based on their comparable figures
26			172.1	4	M1 for $30^2 + 20^2$ or 900 + 400 or 1300 M1 for $\sqrt{30^2 + 20^2}$ or $\sqrt{1300}$ (= 36(.0555)) M1 for a complete method to find the length of wire required e.g. 2×'36.1' + 2×30 + 2×20 A1 172 – 172.2

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PAPER: 1MA0_2F			
Question		**Modification**	**Notes**
2	(a)	Diagram is enlarged.	
4		Diagram is enlarged.	
5	(c)	MLP only: *a* changed to *p*, *d* changed to *q*.	M1 for *p* or 6*q* A1 cao
7	(a)	Diagram enlarged. Angle arc put inside the angle size.	
	(b)	Diagram enlarged. Angle arc put inside the angle size. Braille only: base line given on diagram sheet. Part (c) added: 'Draw a line 8 cm long.'	

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PAPER: 1MA0_2F			
Question		**Modification**	**Notes**
11		Diagram enlarged. Label for vertical axis placed above the axis. Right axis is labelled. 'Number of children': shading changed to dotty shading. Key moved to the top left.	
19	(b)	MLP only: *c* changed to *p*.	M1 for a correct operation to collect the *c* terms or the number terms on one side of the equation e.g. $2p - p + 5 = 8$, $2p + 5 - 5 = p + 8 - 5$ A1 cao
24		Rectangle has been widened so that *AD* and *BC* are 12 cm. In text, 8 metres has been changed to 10 metres.	B1 line parallel to *BC* and 3 cm from *BC* B1 arc drawn centre *C* with radius 5 cm B1 ft for shading a region below their horizontal line **and** inside their arc
25		Diagram is enlarged.	
26		Diagram is enlarged. 20 cm moved to the left. 30 cm moved to the top.	

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Mark Scheme (Results)

November 2015

Pearson Edexcel GCSE
In Mathematics A (1MA0)
Foundation (Calculator) Paper 2F

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November 2015
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PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(i)		Cylinder	1	B1 cao
	(ii)		Cuboid	1	B1 cao
2	(a)		2 hours 20 minutes	2	M1 for a full method to find the difference between the two times or 2.2 hours A1 2 hours and 20 minutes or 140 minutes
	*(b)		No with supporting calculations	3	M1 for adding 18 and 24 to 20 50 A1 21 32 C1 (dep M1) correct conclusion from the comparison of their figure with 21 30 Or M1 for subtracting 18 and 24 from 21 30 A1 20 48 C1 (dep M1) correct conclusion from the comparison of their figure with 20 50 Or M1 for finding the time differences A1 for 40 minutes and 42 minutes C1 (dep M1) correct conclusion from the comparison of their time durations

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
3	(a)		£1.11 and £2.68	3	B1 for (£)1.11 or 111(p) B1 for (£)2.68 or 268(p) or ft from "£1.11" B1 for correct units
	(b)		No (from correct calculations)	3	M1 for finding the value of the coins M1 for a complete method to find the total value of the voucher and coins A1 correct conclusion from correct calculations, eg No, she only has £5.30 Or M1 for finding the difference between the price of the book and the voucher or the price of the book and the coins M1 for a complete method to find the difference between the book and the voucher AND the coins A1 correct conclusion from correct calculations, eg No, she is 20p short
4	(a)		32 9	2	B1 cao B1 cao
	(b)		+7 or $\times\frac{10}{3}$	1	B1 for +7 or $\times\frac{10}{3}$
5	(a)		5	1	B1 cao
	(b)		2.8	1	B1 oe
	(c)		1.5	2	M1 for the intention to subtract 3 from both sides or divide each term by 4 as a first step A1 1.5 oe

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*6			Diagram or chart drawn	4	M1 for key or suitable labels to identify Tyler and Fletcher M1 for 4 correct month labels OR a linear scale M1 for diagram or chart (combined or separate) set up for comparison, correctly showing data for at least three months C1 for fully correct diagram or chart to include all axes correctly scaled and labelled
7	(a)		Diagram	1	B1 cao
	(b)		15	2	M1 sequence written out and continued or diagram drawn or $2n+1$ given as the nth term A1 cao
	(c)		Explanation	1	B1 explanation eg answer must be odd or use of $2n + 1$ or pattern 17 has 35 circles
8	(a)		$\frac{3}{7}$	1	B1 cao
	(b)		2 squares shaded	1	B1 cao
	(c)		150	2	M1 $200 \div 4 \times 3$ or 0.75×200 oe A1 cao
	*(d)		Explanation	2	C2 for a full explanation, eg answer given as 4/35 or "He subtracted 3/5 from a fraction less than 1 so the answer must be less than 1" (C1 for a partial explanation, eg use of a suitable common denominator or " He should have used a common denominator")

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PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
9	(a)		Plus Power	1	B1 cao
	(b)		TMF Energy	1	B1 cao
	(c)		2.9	2	M1 for 11.1 – 8.2 or 8.2 – 11.1 or 8.2 to 11.1 A1 cao
10	(a)		−11	2	M1 for −5 + 12 − 18 oe A1cao
	(b)		24	2	M1 for a method to find the difference eg 18 – –6 or 18 + 6 or use of a number line A1 for 24 accept −24
11			14	2	M1 for 10 – 6 and "4" + 10 or for 10 – 6 and "4"× 2 + 6 A1 for 14 or 10 adults and 4 children
12	(a)		4	1	B1 cao
	(b)		3	2	M1 for listing the numbers in order or an answer of 5 A1 cao
	(c)		2	2	M1 for adding the numbers and dividing by 11 A1 cao

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
13	(a)		Odd	1	B1 cao
	(b)		$5n$	1	B1 cao
	(c)		$\frac{t}{4}$	1	B1 oe
14	(a)		Angle drawn	1	B1 cao
	(b)		Triangle drawn	2	M1 intersecting arcs of radii 6 cm or an accurate triangle with no arcs A1 for a fully correct triangle with arcs
15			19	2	M1 for $2 \times 6.5 + 3 \times 2$ **or** 13 and 6 A1 cao
16			Data collection sheet	3	B3 for a **table** with all 3 aspects: column/row heading 'sport' or list of at least 3 sports column/row heading 'tally' or tally marks (or key) column/row heading 'frequency' or totals oe (B2 for a table with 2 of the 3 aspects) (B1 for a table with 1 of the 3 aspects) NB: 0 marks for questionnaires and graphs

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
17			3.2 m - 5 m	3	M1 man's height seen as 1.6 m - 2 m oe or 5 ft 3 in - 6 ft 7 in oe M1 for 2 to 2.5 × 'man's height' A1 for 3.2 m - 5 m oe or 10 ft 6 in - 16 ft 6 in oe (units needed)
18			11.25	3	M1 for 40 ÷ 8 (= 5) M1 (dep) for finding the area of the triangle eg "5" × 4.5 ÷ 2 A1 cao
19	(a)		3.5	1	B1 cao
	(b)		8	2	B2 cao (B1 for 17.68 or 2.21)
20	(a)(i)		Shapes completed	2	B1 for correct shape
	(ii)				B1 for correct shape
	(b)		Shape enlarged	2	B2 correct enlargement drawn (B1 for correct enlargement in one direction or a correct enlargement with scale factor other than 2)
21	(a)		2:3	1	B1 cao
	(b)		$\frac{3}{5}$	2	M1 ft for adding the numbers in their ratio to get an acceptable total AND using this as their denominator eg 4 + 6 = 10 or 2 + 3 = 5 A1ft $\frac{3}{5}$ oe

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
22	(a)		Point plotted	1	B1 cao
	(b)		positive	1	B1 cao
	(c)		18 - 22	2	M1 for a single line segment with positive gradient that could be used as a line of best fit or a vertical line from 10 or a point plotted at (10, y) where y is in the range 18 - 22 A1 18 - 22
	(d)		45	1	B1 cao
23			32 64 29	4	M1 for $2y$ or $y - 3$ M1 for adding their three expressions and setting equal to 125 M1 for correct method to solve $ay + b = 125$ A1 Ali 32, Bhavara 64 and Ceris 29
24		$0.65 \times 80 = 52$ $\frac{5}{8} \times 80 = 50$ $\frac{5}{8} = 0.625, 62.5\%$ $0.65 - 0.625 = 0.025$ 0.025×80	2	4	M1 for method to calculate the time Celina sings M1 for method to calculate the time Zoe sings M1 (dep on at least M1) for finding the difference between two times A1 cao Or M1 for a conversion to all decimals, fractions or percentages M1 for finding their difference in their chosen system M1 (dep on at least M1) for using their proportional difference multiplied by 80 A1 cao

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
25	(a)		n^2	1	B1 cao
	(b)		a^7	1	B1 cao
*26			No not enough	5	M1 for substituting into Pythagoras' theorem M1 for complete correct use of Pythagoras' theorem M1 for a complete method to find the perimeter of the trapezium A1 51.(20655..) C1 (dep on first two Ms) for correct conclusion dependent upon supporting calculations
*27			125m*l*	4	M1 for a complete method to find the cost per m*l* or the number of m*l* per £1 for one tube or for a method that results in at least two values that can be used to compare two tubes M1 for a complete method to find all three equivalent figures A1 3 correct figures suitable for comparison C1(dep on M2) for stating the correct tube size from their calculations

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Q27	Per 25ml	Per ml	Per £
50ml	54.5	2.18	45.87155...
75ml	56	2.24	44.64285...
125ml	53.8	2.152	46.46840...

Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5°
Measurements of length: ±5 mm

PAPER: 1MA0_2F			
Question		**Modification**	**Notes**
Q01		Models are provided for all candidates. Diagram also provided for MLP	
Q03		Wording added: "There are two spaces to fill."	
Q04	(a)	MLP only: x changed to y Diagram is enlarged. Wording added: "There are two spaces to fill."	
Q05	(c)	MLP only: x changed to y.	
Q06		Grid enlarged. Last 3 columns removed.	
Q07		Patterns placed vertically with the start of no. 4 put below no.3. Wording changed. "Pattern number 4 has been started below pattern number 3. Complete pattern number 4."	
Q08	(a)	Diagrams enlarged Dotty shading added	
Q09		"Local gas" row removed.	

PAPER: 1MA0_2F			
Question		**Modification**	**Notes**
Q14	(a)	Line given is 10 cm.	
Q14	(b)	Base line of 6 cm given.	
Q15		MLP only: g changed to f.	
Q17		Outline and wheels of bus given. "Bus" written inside. Dashed line from man's head over to bus – labelled "height of man." Dashed line from top of bus stretching to the right and labelled "height of bus." "ground" labelled. Diagram enlarged.	
Q18		Diagram enlarged, measurement arrows removed.	
Q20	(a)	Diagram is enlarged.	
Q20	(b)	Transformation drawn on diagram. Wording changed: "The diagram shows triangle P and triangle Q on a grid. Describe the single transformation that maps triangle P on to triangle Q." Diagram enlarged. Answer lines added.	
Q22		Grid enlarged. Crosses changed to filled in circles. Right axis labelled.	
Q25	(b)	All candidates: a changed to y.	
Q26		Diagram enlarged and labelled ABCD. Measurement lines removed. Information given in text.	
Q27		Diagram removed.	

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Mark Scheme (Results)

November 2015

Pearson Edexcel GCSE
In Mathematics B (2MB01)
Foundation (Calculator) Unit 1

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November 2015
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NOTES ON MARKING PRINCIPLES

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2 Mark schemes should be applied positively.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Note that in some cases a correct answer alone will not score marks unless supported by working; these situations are made clear in the mark scheme. Examiners should be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will award marks for the quality of written communication (QWC).
The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labelling conventions.

ii*) select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Partial answers shown (usually indicated in the ms by brackets) can be awarded the method mark associated with it (implied).
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks; transcription errors may also gain some credit. Send any such responses to review for the Team Leader to consider.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect cancelling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

11 Linear equations

Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded (embedded answers).

12 Parts of questions

Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers

Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

14 The detailed notes in the mark scheme, and in practice/training material for examiners, should be taken as precedents over the above notes.

Guidance on the use of codes within this mark scheme
M1 – method mark for appropriate method in the context of the question A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

5MB1F_01 November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
1.	(a)		Black	1	B1 cao
	(b)		Fran	1	B1 cao
	(c)		Derek	1	B1 cao
2.	(i)		16	2	B1 cao
	(ii)		12		B1 cao
3.	(a)		A	1	B1 cao
	(b)		D	1	B1 cao
4.			£44.80 or 4480p	4	M1 for 8565 – 8437 (=128) M1 for "128" × 35 A1 for digits 448(0) C1 for £44.80 or 4480p ie clearly stated answer with correct money notation.

5MB1F 1F November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
5.			Diagram or chart	4	B1 for a key or suitable labels to identify the Wizard and Reds. The key may be ignored if unclear provided the graph is clear, ie if different colours are used to shade in the graph. B1 for a diagram(s) or chart(s) set up for comparison showing data for at least 3 months eg dual bar chart, composite bar charts, frequency polygon, etc. B1 for correct heights for Wizards or Reds or totals C1 for a fully correct diagram or chart.
6.		(S,F), (S,M), (S,P) (J,F), (J,M), (J,P)	6 choices	2	B2 for all 6 choices with no extras or repeats (B1 for at least 3 correct; ignore extras or repeats)
7.	(a)		$\frac{3}{10}$	2	M1 for $\frac{a}{10}$ or $\frac{3}{b}$ where $a < 10$ and $b > 3$ A1 for $\frac{3}{10}$ oe
	(b)		$\frac{7}{10}$	1	B1 ft or for $\frac{7}{10}$ oe

5MB1F 1F November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
8.	(a)		3	2	M1 for evidence of ordering A1 cao
	(b)		4	2	M1 for 6 – 2 A1 cao
	(c)		3.5	2	M1 for (3 + 6 + 2 + 2 + 5 + 3) ÷ 6 or 21 ÷ 6 A1 cao
9.			Data collection sheet	3	B1 for data illustrated for fruit (at least 3 items) or correct heading B1 for tally column or frequency column labelled B1 for suitable data collection sheet appropriate to the task e.g. with exactly 3 columns and which are all correctly labelled NB do not accept questionnaires or graphs

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5MB1F 1F November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
10.			67	2	M1 for at least three of 1 × 8, 2 × 6, 3 × 7, 4 × 4, 5 × 2 or at least three of 8, 12, 21, 16, 10 A1 cao
11.	(a)		15.86	4	M1 for 4 × 96 (= 384) or 3 × 56 (= 168) M1 for (“384” + ”168”) × 3 ÷ 4 oe or sight of 414 M1 for 20 – “4.14” or 1586 A1 cao **OR** M1 for 4 × 96 (= 384) or 3 × 56 (= 168) M1 for 20 – (“384” + ”168”) or 20 – “552” (= 1448) M1 for “1448” + (“552” ÷ 4) A1 cao NB allow work in £ or p for M marks
	(b)		7	2	M1 for 14 ÷ 1.84 or 7.60(8695…) or 12.88 and 14.72 A1 cao
12.	(a)		$20 - t$	1	B1 for $20 - t$
	(b)		$4x + 20y$	2	B2 for $4x + 20y$ (B1 for $4x$ or $20y$)

5MB1F 1F November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
13.	(a)		20	2	M1 for $\frac{60}{360}\times 120$ A1 cao **OR** M1 for 360 ÷ 120 (= 3) or 60 ÷ 3 A1 cao
	(b)		50	3	M1 for 360 – (45 + 60 + 105) (= 150; could be measured) M1 for 360 ÷ 120 (= 3°) or "150" ÷ 3 A1 for 50; allow answers in the range 49-51 **OR** M1 for 360 – (45 + 60 + 105) (= 150; could be measured) M1 for $\frac{"150"}{360}\times 120$ A1 for 50; allow answers in the range 49-51 **OR** M1 for 360 – (45 + 60 + 105) (= 150; could be measured) M1 for $\frac{"150"}{60}\times "20"$ A1 for 50; allow answers in the range 49-51 **OR** M1 for working out how many in all three sectors M1 for subtraction from 120 A1 for 50; allow answers in the range 49 - 51

5MB1F 1F November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
14.	(a)		(146, 41)	1	B1 point plotted
	(b)		Description	1	B1 for description of dynamic relationship or statement of positive correlation
	(c)		155 – 158	2	M1 for a single straight line segment with positive gradient that could be used as a line of best fit or a horizontal line from 47.5 A1 answer in the range 155 – 158 or ft from line
15.	(a)		Out: 1023/1148 Return: 1737/1918 in Colwyn 5h 49min	4	B1 for selecting 1023 train (cheapest out) B1 for selecting 1737 B1 for 5h 49min (spent in Colwyn) C1 (dep on at least B1) clearly stating departure and arrival times of both trains used and correct time in Colwyn for their trains
	(b)		133.40	3	M1 for 30% of any adult fare M1 for 2 × adult fare + 3 × child fare for at least one of their chosen trains A1 (accept 133.4) (SC B2 for £188.60)

5MB1F 1F November 2015

Question	Working	Answer	Mark	Notes
16.	<table><tr><td></td><td>Bus</td><td>Pre</td><td>Ec</td><td>Tot</td></tr><tr><td>M</td><td>(30)</td><td>28</td><td>34</td><td>(92</td></tr><tr><td>F</td><td>14</td><td>32</td><td>(62)</td><td>108</td></tr><tr><td>Total</td><td>(44)</td><td>(60)</td><td>96</td><td>(200</td></tr></table> ( ) value given	28	4	M1 for total female passengers 200 – 92 or 108 seen; or for total Economy passengers 200 – 44 – 60 or 96 seen. M1 for male passengers in Economy “96” – 62 or 34 seen; or for female Premium “108” – 62 – (44 – 30) or 32 seen M1 for 92 – 30 – “34” or for 60 – “32” A1 cao **OR** Answers may appear in a two-way table with no other method seen B1 for Female total 108 or Total Economy 96 M1 for “96” – 62 or 34 seen in Male Economy; or “108” – 62 – (44 – 30) or 32 seen in Female Premium M1 for 92 – 30 – “34” or for 60 – “32” A1 cao

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Angles: ±5°
Measurements of length: ±5 mm

PAPER: 5MB1F_01			
Question		**Modification**	**Notes**
Q01		Row for Gary removed.	
Q02		Diagram enlarged.	
Q03		Crosses changed to filled in circles. Diagram enlarged.	
Q05		Value on table changed: Wizard: 20 28 18 32. Reds not altered. Grid enlarged.	
Q10		Frequency column widened to allow for working.	
Q13		Diagram enlarged.	
Q14	(a)	Grid enlarged. Crosses changed to filled in circles. 146 cm changed to 150 cm. 41 kg changed to 40 kg.	
Q15		Crewe to Colwyn – First 2 columns removed. Colwyn to Crewe – First and last columns removed	

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Mark Scheme (Results)

Summer 2017

Pearson Edexcel GCSE
In Mathematics A (1MA0)
Foundation (Calculator) Paper 2F



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Summer 2017
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6 Mark schemes will indicate within the table where QWC is being assessed. The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labeling conventions.

ii*) select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

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The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

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If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
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Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader.
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It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect canceling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.
Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
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If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

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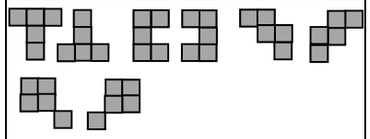
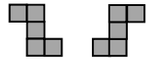
Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

12 Parts of questions
Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers
Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

Paper: 1MA0/2F					
Question		Working	Answer	Mark	Notes
1	(a)		6500	1	B1 cao
	(b)		168	1	B1 cao
	(c)		Arrow at 7.2	1	B1 cao
2	(a)		(2, 1)	1	B1 cao
	(b)		(0, 5)	1	B1 cao
	(c)		(1, 3)	1	B1 cao
	(d)		Point	1	B1 for point marked, eg at (4, 5) or (4, 3) or (5, 5) or (7, 6) or (3, 4) or (4, 7)
3			54	3	M1 for 200 ÷ 3.85 (= 51.94.. or 51) or 200 ÷ 3.65 (= 54.79.. or 54) or 200 ÷ 3.49 (= 57.31.. or 57) M1 for working out all of the above, or an answer of 54.79... A1 cao
4	(a)		Mark at $\frac{1}{2}$	1	B1 for mark at $\frac{1}{2}$
	(b)		Mark at 1	1	B1 for mark at 1
	(c)		Mark at $\frac{1}{4}$	1	B1 for mark at $\frac{1}{4}$

Paper: 1MA0/2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
5	(a)		4.5	1	B1 for 4.3 to 4.7
	(b)		Sector drawn	1	B1 for sector drawn
	(c)		Chord	1	B1 cao
6		SP, SL, SR, SF, SC, MP, ML, MR, MF, MC	10 outcomes	2	M1 for at least 4 correct outcomes A1 for all 10 correct outcomes with no incorrect outcomes and no repeats
*7			Liz is wrong (supported)	4	M1 for adding the 4 times eg 2 × 1 min + 2 × 45secs (= 3 min 30 sec or 210 sec) M1 for 60 ÷ "3.5" (= 17.14..) oe or 200 ÷ 10 (= 20) M1 for complete method leading to comparable figures eg. compares no. trips: 60 ÷ "3.5" (=**17.14**..) and 200÷10 (**20**) compares no. people: 60÷ "3.5" (=17.14..) then ×10 (=**171.4**..) [**200** given] compares tot. time needed: 200÷10 (=20) then × "3.5" (=**70**) [**60** min given] compares time per trip 200÷10 (=20) then 60 ÷ "20" (= **3**) ["**3.5"**calculated] C1 for statement that Liz is wrong with correct comparable figures (see above) NB: throughout accept rounding of 17.14 to 17 for all marks, and work in seconds if consistent.
8	(a)		Shape completed	1	B1 for a correct shape
	(b)		Shape completed	1	B1 for a correct shape

Paper: 1MA0/2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
9		Yes with correct calculations	3	M1 for 768 ÷ 56 (= 13.71...or 14) OR 13 × 56 (=728) or 14 × 56 (=784) M1 for (768 – 19) ÷ 56 (= 13.375) OR for [13 × 56 (=728) or 14 × 56 (=784)] **and** 768 – 19 (= 749) A1 for correct conclusion from correct calculations, eg Yes, he still needs 14 buses.
*10		Diagram or chart	4	M1 for a key, or suitable labels, to identify Year 7 and Year 8 M1 for diagram or chart (combined or separate) set up for comparison, correctly showing data for at least 3 days, e.g. dual bar chart, line graph M1 for correct heights, dependent on a linear scale (condone up to 2 errors) C1 for a fully correct diagram or chart to include labels for days of the week and vertical axis correctly scaled and labelled.
11 (a)		0927	1	B1 cao
(b)		12	2	M1 for method to add 50 minutes to 0935 (= 1025) or method to find the difference between 0935 and 1013 (= 38) A1 cao
12 (a)		12	1	B1 cao
(b)		45	1	B1 cao
(c)		16	2	M1 for correct order of inverse operations –12 then ÷3 or for forming the equation $3x + 12 = 60$ and showing intention to subtract 12 from both sides or divide each term by 3 as a first step A1 cao
13		4	3	M1 for 10 + 10 + 10 (= 30) M1 for (“30” – 11 – 11) ÷ 2 oe A1 cao

Paper: 1MA0/2F					
Question		Working	Answer	Mark	Notes
14	(a)		6	1	B1 cao
	(b)		5.5	2	M1 for listing the numbers in order or an answer of 4 A1 for 5.5
	(c)		7	2	M1 for 9 – 2 or 2 – 9 or 2 to 9 A1 cao
15	(a)		trapezium	1	B1 cao
	(b)		8	2	M1 for a strategy to find the area, eg splitting the shape into two triangles or drawing a rectangle around it or using the formula for the area of a trapezium A1 cao
	(c)		Shape reflected	2	B2 for correct reflection drawn (B1 for 3 vertices correct or correct orientation, incorrect position)
	(d)		Enlargement sf 3 drawn	2	B2 correct enlargement drawn (B1 for any two sides correct or a correct enlargement with scale factor other than 3)

Paper: 1MA0/2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
*16		Yes with comparable values	3	M1 for method to change 14 ft 4 in to in eg 14 × 12 + 4 (= 172) M1 for method to convert an amount of in to cm eg "172" × 2.54 (= 436.(88) or 437), 4 × 2.54 (=10.16), (12 × 14) × 2.54 (=426.72) C1 for Yes with 4.36-4.37 or with 436.(88) or 437 and 440 OR M1 for method to convert 4.4 m to cm eg 4.4 × 100 (= 440) M1 for method to convert cm to in eg 440 ÷ 2.54 (= 173.22...) C1 for Yes with 14 ft 5 in OR M1 for method to convert 4.4 m to cm eg 4.4 × 100 (= 440) M1 for method to change 14 ft 4 in to in eg 14 × 12 + 4 (= 172) C1 for Yes with 173(.22..) and 172
17		6.29	3	M1 for using 1kg = 1000 g, eg 650 ÷ 1000 (= 0.65) M1 complete method, eg "0.65" × 9.68 or 9.68 ÷ 1000 × 650 or for 6.292 A1 for 6.29, accept 6.3(0) SC: B1 for 62.92
18 (a)		10	1	B1 cao
(b)		7	2	M1 for 11 20 – 11 00 (= 20) or 11 57 – 11 30 (= 27) or 57 – 20 (=37) or 57 – 27 (=30) A1 cao
(c)		12	1	B1 cao

Paper: 1MA0/2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
*19		Vans for hire and correct calculations	5	M1 for method to find $\frac{1}{3}$ of 87 (= 29) or $\frac{2}{3}$ of 87 (= 58) oe M1 for complete method to find cost for Best vans, eg (87 – "29") × 2 (=116) M1 for method to find the cost of the extra miles, eg (400 – 250) × 0.15 (= 22.50) or (400 – 250) × 15 (= 2250) M1 for complete method to find cost for Vans for hire, eg 44 × 2 + "22.50" (=110.5(0)) with consistent units C1 for Vans for hire and 116 and 110.5(0)
20	$\frac{2}{5}$, 0.405, 41%, $\frac{3}{7}$, 0.45	Ordered numbers	2	M1 for conversion to decimals or conversion to percentages or correct order with one error or correct order but reversed. A1 for correct order
21 (a)		5, 4, (3), 2, 1, (0)	2	M1 for 1 or 2 or 3 correct entries A1 cao
(b)		Line drawn	2	M1 plots 5 of their points correctly or a straight line with gradient –1 or a straight line through (0, 4) A1 correct line between $x = -1$ and $x = 4$
22		Question	2	B1 for a question with a time frame for frequency of use B1 for at least 3 correctly labelled response boxes (non-overlapping and exhaustive) [Do not allow inequalities in response boxes]
23		555	3	M1 for recognising that 1295 is 70% eg 70% = 1295 M1 for 10% = 1295 ÷ 7 (=185) or 1% = 1295 ÷ 70 (=18.5) or 1295 × $\frac{3}{7}$ oe or (1295 – 185) ÷ 2 or $1295 \times \frac{10}{7}$ oe (=1850) A1 cao

Paper: 1MA0/2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
24	**£:** 189 ÷ 1.39= 135.97 174 ÷ 1.27 = 137.01 **SF:** 115 × 1.39 = 159.85 174 ÷ 1.27 × 1.39 = 190.44 **€:** 115 × 1.27 = 146.05 189 ÷ 1.39 × 1.27 = 172.68	London with correct comparable figures	3	M1 for method to convert one price to another currency, eg 189 ÷ 1.39 M1 for a complete method leading to 3 prices in the same currency or to figures that can be used to compare the 3 prices A1 for London and correct comparable figures. (accept rounded or truncated to the nearest unit)
25 (a)		positive	1	B1 cao
(b)		17 – 21.5	2	M1 for a single line segment with positive gradient that could be used as a line of best fit or a horizontal line from 21 or a point plotted at (x, 21) where x is in the range 17 – 21.5 A1 for answer in range 17 – 21.5
26		23	3	M1 for method to find difference in cost, eg 23×24 – 425 (= 127) or for 425 ÷ (23×24) (= 0.7699...) or 24 – (425 ÷ 23) (=5.52…) M1 for $\frac{"127"}{"552"} \times 100$ oe or 100 – "0.7699"×100 or $\frac{"5.52"}{24} \times 100$ A1 for answer in range 23 – 23.01
27		22.6	3	M1 for $19.3^2 + 11.7^2$ or 372.49 + 136.89 or 509.38 M1 for $\sqrt{19.3^2 + 11.7^2}$ or $\sqrt{509.38}$ A1 for answer in range 22.5 to 22.6
28		72	4	M1 for "x" + 24 or "x" – 24 or for "g" and 5"g" M1 for forming an appropriate equation eg $x + 24 = 5(x - 24)$ or for $(5g - g) \div 2 = 24$ or $g = 12$ M1 for correct operations to isolate x terms and non-x terms in an equation of the form $ax + b = cx + d$ or $ax + b = c(x + d)$ or $x = 36$ or for 6 × "12" oe A1 cao

Paper: 1MA0/2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
*29		No (supported)	5	M1 for π × 9 ÷ 2 (=14.137…) or π × 5 ÷ 2 (=7.85…) or for π × 9 (=28.27…) or π × 5 (=15.7…) M1 for complete method to work out perimeter: 2 + 2 + (π × 9 ÷ 2) + (π × 5 ÷ 2) (= 25.99...) M1 (dep M1) for method to find number of rolls required for their perimeter, eg "their total perimeter" ÷ 2.4 eg 25.99..÷2.4 (=10.8), "47.98.."÷2.4 (=19.9) or "43.98.." ÷2.4 (=18.3) M1 for method to work out cost eg 3×10 + 2×3.99 (= 37.98), or 11 × 3.99 (=43.89); 20 →67.98, 19→63.99 or for method to find how many rolls can be bought for £35 (= 10) C1 for a conclusion supported by fully correct answers eg 37.98 (for comparing with 35) or 10 and 10.8 OR M1 for π × 9 ÷ 2 (=14.137…) or π × 5 ÷ 2 (=7.85…) or for π × 9 (=28.27…) or π × 5 (=15.7…) M1 for complete method to work out perimeter eg 2 + 2 + (π × 9 ÷ 2) + (π × 5 ÷ 2) (= 25.99...) M1 for a method to find how many rolls can be bought for £35 (=10) M1 for a method to work out the coverage of 10 rolls e.g. 10 × 2.4 (=24) C1 for a conclusion supported by fully correct answers eg 25.9(...) and 24

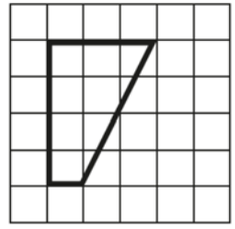
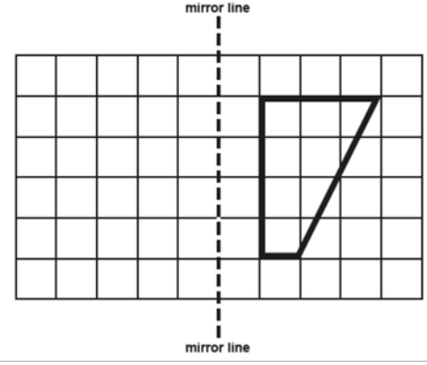
Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5°
Measurements of length: ±5 mm

PAPER: 1MA0_2F

Question		Modification	Mark scheme notes
1	(b)	Diagram enlarged. Arrow head changed to an open headed arrow.	Standard mark scheme
1	(c)	Diagram enlarged. Wording 'with an arrow' removed.	Standard mark scheme
2		Grid enlarged. Crosses changed to solid dots.	Standard mark scheme
2	(d)	Wording 'with a cross (x)' removed.	Standard mark scheme
4	(a)	Diagram enlarged. Wording 'below' and 'with a cross (x)' removed.	Standard mark scheme
4	(b)	Diagram enlarged. Wording 'below' and 'with a cross (x)' removed.	Standard mark scheme
4	(c)	Diagram enlarged. Wording 'below' and 'with a cross (x)' removed.	Standard mark scheme
5	(a)	Diagram made 7.5 cm diameter. Dot made bigger.	B1 for 7.1 to 7.9
5	(b)	Diagram made 7.5 cm diameter. Dot made bigger. Wording 'Shade' replaced with 'Mark'.	Standard mark scheme
5	(c)	Diagram made 7.5 cm diameter. Dot made bigger.	Standard mark scheme
8	(a)	Diagram enlarged. Shading changed to dotty shading.	Standard mark scheme
8	(b)	Diagram enlarged. Shading changed to dotty shading.	Standard mark scheme
10		Table turned to vertical format and left aligned. Wednesday's numbers in the table changed from 17 and 11 to 18 and 10. Thursday's numbers in the table changed from 21 and 13 to 20 and 12. Grid enlarged.	Apply standard mark scheme for: Mon Tue Wed Thu Fri Y7 16 14 18 20 26 Y8 16 18 10 12 20

PAPER: 1MA0_2F			
Question		**Modification**	**Mark scheme notes**
11		First column of timetable has been removed from the table. Horizontal lines have been added to the information.	Standard mark scheme
13		Diagrams enlarged. 11 cm measurement on the rectangle moved above the rectangle.	Standard mark scheme
15	(a),(b)	Diagram enlarged. Shape changed. Wording 'centimetre' removed. Wording added 'Each square on the grid represents a one centimetre square'. 	Standard mark scheme for this shape; answers remain the same.
15	(c)	Diagram enlarged. Shape changed. Mirror line added to the top of the line as well. 	Standard mark scheme applied to this shape.
15	(d)	Question reversed. Shape changed. The quadrilateral which is labelled 'Shape P' has been enlarged by a scale factor 3 and labelled 'Shape Q'. Question wording changed to 'It shows Shape P and Shape Q given on a grid. Describe the single transformation that maps Shape P onto Shape Q.' 3 answer lines have been provided. 3 rows have been cut off the side and 2 rows have been removed from the top of the grid and one from the bottom.	B1 for enlargement B1 for scale factor 3

PAPER: 1MA0_2F			
Question		**Modification**	**Mark scheme notes**
18		Diagram enlarged. Axes labels moved to the left of the horizontal axis and above the vertical axis. Right axis has been labelled. Graph line moved so it finishes at 11.55.	Amended mark scheme: M1 for 11 20 – 11 00 (= 20) or 11 55 – 11 30 (= 25) or or 55 – 20 – "10" A1 for 5
20		Wording 'five' added.	Standard mark scheme
21	(a)	Table has been turned to vertical format and left aligned. Wording added 'There are four spaces to fill.' Braille only: will label the spaces to fill (i) to (iv).	Standard mark scheme
21	(b)	Diagram enlarged.	Standard mark scheme
25		Diagram enlarged. Axes labels moved to the left of the horizontal axis and above the vertical axis. Right axis has been labelled. Crosses have been changed to solid dots. In (b) the number 21 cm has been changed to 20 cm.	Standard mark scheme but in (b) the range used should be 20 - 24
27		Diagram enlarged. Braille only: will add information about the diagram into the question wording.	Standard mark scheme
29		Diagram enlarged. Arrows removed from 2 m. Open headed arrows for 5 m. Dot has been made bigger. Information removed from the box and written as a sentence in the question wording.	Standard mark scheme

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Question 21

Many students were able to gain some marks on this question. With many able to gain at least one mark either for finding a total of 18 boys or the number of girls who got the bus. However, those who wrote down a mass of figures with no indication what these represented rarely scored any marks unless the final answer was correct; it is imperative the students do show clearly their route through a problem like this.

The most successful approach was to use a two-way table or a frequency tree, but others were also able to gain full marks. It was common for students not to have a logical approach and to see numbers spread across the page without any indication of what the numbers represented. Students should realise that writing words or descriptions would help their own reasoning and also enable them to be awarded method marks, as the method is clearly indicated.

Although there were different paths through the problem, a popular method was to find the number of boys that walked and add it to the number of girls that walked. Those who used a two-way table or a frequency diagram got this correct more often than those that just tried working logically through the problem.

A common mistake with a frequency diagram was to miss off the girls that cycle or boys that walk and only place the figures already given in the diagram whereas with a two-way table it was more obvious which ‘gaps’ had to be filled. If a diagrammatic approach is to be used it is worth reminding students to draw the diagrams big enough to fill in, some frequency trees were very difficult to read.

A different approach was to try to find the total that didn't walk and subtract from the overall total, this was not so accurately done as the girls that cycled were often missed.
A common misconception seen was to just add all the numbers given and subtract from the total.

Question 9

Both questions in part (a) were usually correctly answered.

In part (b), a great many students failed to use the ratio of the numbers of records sold on Wednesday to the number of records sold on Thursday. The most common approach was to divide 36 by 8 (= 4.5) leading to an incorrect pictogram. Some students identified 4 and 32 but only in their attempt to find the number of 8s in 36. This gained no credit; the 4 and 32 had to be clearly seen as a result of dividing 36 in the ratio 1 : 8. It was common to see pictograms with the correct symbols reversed for Wednesday and Thursday, indicating that some students had not read the question carefully enough. Very few students followed an algebraic approach and equations such as $x + 8x = 36$ were rarely seen.

Question 26

Part (a) was not answered well, with very few able to state the correct class interval. Most common answers were to give the group above the one required.

Part (b) was another question without any distractors which was done poorly. The most common error was to misread the scales, or not join the points. Some drew a line of best fit, but this was ignored.

Question 27

In general, the statements made were not specific enough to be awarded marks. Stating “the scale is wrong” is insufficient; students need to refer to the axis and what is wrong with the scale. It was clear from the responses that many students did not know what a time series graph should look like and interpreted it as an attempt at a scatter graph, or a line graph. Many incorrectly thought the vertical axis should have integer values. Marks were most commonly awarded for students who stated that the points should have been joined using straight lines, or that the horizontal axis was confusing or misleading in some way (some making references to missing labels, but rarely the absent 1).

Question 6

This question was generally answered well. Nearly all students could use the representation to write down the number of pictures sold in January in part (a) of the question.

In part (b) a similarly high proportion of students could represent the number of pictures sold in April on the diagram.

Most students could also score the two marks available in part (c) though a significant proportion of responses contained mistakes in arithmetic, usually in one of the totals for a particular day. These responses normally got one mark for adding the four totals 24, 28, 20 and 12, three of which were correct.

Question 18

Marks gained for responses to this question were usually restricted to one or two marks for either finding the value of x in the pie chart for school A and/or for finding the number of students at school B who had tigers as their favourite animal. It was relatively rare to see a student complete the question successfully. Many students seem to get confused between the angles which represented the proportions of students and the numbers of students themselves.

Question 21

It was pleasing that many students were able to identify at least one of the things wrong with the frequency polygon. Often this was the missing frequency label on the vertical axis or the fact that the first point has been plotted incorrectly but some students identified the line joining the first and last points. Statements were often too general or incomplete. A statement such as 'the points have been joined up wrong' does not identify what is wrong in the way the points have been joined up. Similarly 'the points have not all been plotted correctly' is not sufficient as it does not specify that it is the first point that has been plotted incorrectly. A common incorrect answer was that the scale on the horizontal axis should start at 0, not at 10. Some students suggested that the points should not be joined at all or that the points should have been joined with a curve. A number of students incorrectly referred to lines of best fit.

Question 9

Part (a) required students to tally data and complete a frequency column. This was generally answered very well. However, there were a number of students who completed frequencies in the tally column and then wrote probabilities (out of 18) in the frequency column and thus lost a mark. A small number of students wrote cumulative frequencies in the frequency column but often showed correct frequencies in the tally column.

Part (b) required students to draw a bar chart to represent this data, and again this was completed well, although the most common mark was two out of three marks. This was because most students made a mistake in some way. The most common of these mistakes was to miss the frequency label from the vertical axis or to have a non-linear vertical scale.

Part (c) was for recognising the most popular pet. The only students who dropped this mark were ones who left the response blank.

Question 13

A very well answered question. A large number of students were able to extract the correct two values from the stem and leaf diagram and find the difference for two marks. It was not uncommon for students to write the answer as a range of values, such as 31 – 74, rather than subtract, and in this case one mark was awarded. Of those who were not awarded the marks, it was often due to finding the median and on occasion, some found the mean.

Question 7

The great majority of students scored well on this question. Loss of marks usually centred on incorrect, inconsistent or ambiguous keys. Some students lost a mark by trying to describe the key in words without drawing a pictorial representation.

Many students offered alternative keys to that required, accompanied by amendment to the given representation for Monday, but were able to score full marks if their pictogram was correct in relation to their key.

Question 14

Only a handful of students failed to score at least one mark in this question, with the majority correctly filling in at least two aspects of the given information. Many correctly completed the top row and this usually resulted in a fully correct table.

Question 26

It is very disappointing to note that only a small minority of candidates considered any measure of spread in their solutions. Finding the median of the boy's heights was often attempted with varying success, 167 cm or 167.5 cm being common errors.

Far too many students failed to answer the question and offer any comparisons in their solutions, preferring to merely state values of the girls' and boys' heights, namely the least, the greatest and the median heights. It does seem that a good number of students were not sure what 'compare' actually meant with many simply commenting on the presentation of the data, or using words such as "whereas", "but" or "only" in an attempt to compare.

Question 7

Students were required to critically evaluate the presentation of information in a graph in this question, with nearly all gaining at least one mark, and a great many students being awarded both of the marks available. Most students correctly identified that the scale was presented incorrectly, that there was a missing label or that the width of Tom's bar was different. Marks were often lost for statements such as there being a missing key or title or for comments relating to the gaps between each bar, with some also stating that the bars should be joined.

Incomplete or ambiguous statements, such as the scale needed to go up in tens or that it shouldn't start at zero, also led to the loss of marks, as did any statements containing a contradiction such as the scale started at 70.

Question 14

Working out the angles in a pie chart and drawing the pie chart remain challenging skills for many students. This question was not well answered with a large proportion of students failing to gain any marks at all. A lack of working hindered students from scoring any of the available marks, it was possible to score two marks by converting the frequencies given into angles. It was also possible to score two marks by drawing one correct angle on the pie chart. Many students totalled the number of goals but then failed to associate 120 with 360 and were unable to calculate correct angles. Those who calculated the appropriate angles did not always manage to draw the pie chart accurately or failed to label the sectors appropriately.

More practice drawing pie charts does seem to be required.

Question 8

The great majority of students spotted the error in the bar chart. Quantifying their response was not required.
Common incorrect responses included: 'no title on the bar chart', 'the x and y axes are not labelled' and 'the frequency axis should not go up in 2s'.

Question 11

The vast majority of students answered part (a) correctly and thus showed clear understanding of the key. Part (b) was not as well answered, many students were happy to count the complete symbol as 8 but then thought that the smaller squares represented1 video game, giving 19 and 9 for Tuesday and Wednesday respectively. Many students were able to find the 22 or the 10 but not both or gave the answer 6 from 22 -16, the difference between Monday and Tuesday

In part (c), there were very many correct solutions. Some reversed their diagrams for Thursday and Friday, some simply shared the 32 video games equally between the two days. Mistakes were also common in the division of (or inability to divide) 32 by 4.

Question 8

A high proportion of students added the correct heights to give 35 and many went on to gain full marks by dividing by five. A few divided by six, so only gained one mark, and there were some arithmetic errors and misreading of the y-axis, causing the accuracy mark to be lost.

There were also some students who used both the frequencies and the numbers on x-axis adding a mixture of both or adding all together whilst others incorrectly multiplied the number on the dice by the frequency. All these methods were incorrect and did not score any marks.

Question 16

This question required students to interpret a pie chart, firstly to find the number of cars being represented in a sector followed by calculating a probability, with many finding both parts of the question challenging.

A range of approaches using either knowledge of the number of degrees in a pie chart or using proportionality could gain credit, with the most successful approach appearing to be to use an appropriate method to find the number of degrees per car or per 10 cars. However, many deducted the number of degrees difference for the two sectors from the number of black cars arriving at the incorrect answer of 125 or dividing by 10 rather than 9 when working with proportionality. Very few identified that the whole pie chart represented 540 cars and used this to work out the number represented by 80 degrees.

Students were required to combine knowledge of probability with interpretation of the pie chart in part (b). Whilst many gained a mark for using 50 as the numerator in a fraction, the majority were unable to also give a correct denominator. Common incorrect denominators included 100, presumably using percentage, or 360 from using the total number of degrees in a circle.

A small minority of students are still expressing a probability as a ratio rather than a fraction, decimal or percentage. Centres are encouraged to promote the use of fractions for probability in this type of problem.

Question 9

There were many fully correct answers. Nearly all students gained at least 1 mark for placing the given values in the correct cells of the table. Early errors in calculations meant that these errors continued, and students failed to adjust their errors to match the given numbers. Weaker students gained 1 mark for either the first column or the total row or column.

Question 20

This question was answered well, though performance was poor compared to previous years. Many lost a mark due to the omission of a number or failed to order the leaves correctly. The key was often missing, or incomplete.

Question 6

Very well answered with few errors. Errors tended to be either giving the number of sunshine hours on Sunday or the sum of the two day's values.

Question 8

In part (a), the modal mark was 2 for a fully correct bar chart. Sometimes just one bar was drawn correctly gaining one mark. Failure to score any marks was more often than not because the student left the whole diagram blank.

Part (b) was a little more demanding. Many realised why Rupa was incorrect but could not always express their reasons clearly. The marking was sympathetic and credit was given if explanations implied some understanding.

Some confused January's results with February's, resulting in contradictory information given in their response. A common misunderstanding was that only whole numbers could be used, or that rainfall could not be measured in part cm.

Some students found it difficult to find the half-way point between 15 and 20. Many read from the graph and stated that the amount of rainfall was 17 or 18 cm. This question exposed many mis-conceptions regarding decimal and whole numbers, discrete and continuous data.

Some students contradicted the question and asserted that Rupa was correct.

Question 21

Those students who understood the concept of a stem and leaf diagram usually scored well, losing marks generally through carelessness by omitting a value or giving an unordered diagram or an incomplete key. Some errors in the key including 'people' when the figures were ages. Pictograms and tally charts were quite often seen.

Question 13

Completing the two-way table was well done by the students with the vast majority scoring 2 or 3 marks. The main errors were a failure to give the final total as 198. Students should be encouraged to tick off values in the question as they are used.

Some students placed one of the initial given values in the wrong box or made arithmetic errors. As with most questions on this paper, student outcomes would be improved by making use of their calculator instead of relying on written methods on calculator papers. It is also important to reinforce the importance of checking answers. In this question, students should be encouraged to check if the total column and row of the two-way table add up and if they do not then they should be encouraged to try again.

Question 7

This question was answered well, though there was a significant minority who did not attempt the question or fail to gain at least one mark. The main issues for students who did not earn full marks were either poor numeracy skills (not using a calculator), misreading numbers from the table, or only working out the difference for one week. They rarely opted for the method of finding the difference for each week, this method was very poorly executed as they tended to either ignore the −5 altogether or simply ignore the negative. A surprising number of students appeared not to use a calculator.

Question 26

Most students gained at least one mark, either spotting that the 40 was missing from the frequency scale or that the last point was plotted incorrectly. Clear statements were often given which made the marking more straight forward. Common incorrect statements included that the first and last points should be joined to make a polygon, the graph should start at 0 or that a line of best fit would be better.

Question 9

Most students were awarded full marks. Of those not scoring full marks, a common error was with the linear scale. Many chose an appropriate linear scale of one square to one unit, although there were some candidates who labelled the spaces rather than the lines and others who did not start their scale at zero which often resulted in the 3 bar being only 2 squares high. Other errors with linear scale included using a scale of 3 to a square or 5 to a square, which caused issues when drawing their bars as it was difficult to clearly represent all of the frequencies.

Centres should give students practice in identifying an appropriate scale when drawing graphs

Question 15

The marks for this question were well distributed over the full range available.

For part (a) when full marks were not scored the main issues were with the key, omission of a figure, or uncertainty around how to place '103'. Some students were unsure on how to represent this number with some choosing to use 1 in the stem instead of 10 or 100, and/or writing stem as 03. Secondly, some students were unsure of the notation needed to explain the key, with some writing in words and others using various symbols as a separator between the tens and units. Practice of examination questions and emphasise the importance of crossing out the numbers as they place them in the diagram, completing an unordered diagram first, then ordering it allowing them to order fewer integers at once. Students should always check that they have the same number of values in their diagram as there are in the original question, this is an easy way to avoid losing marks.

For part (b), if pupils understood the median, they were generally successful in gaining 1 or 2 marks. A significant number of students disregarded the stem and leaf diagram and re-wrote the list, not appreciating that the median could be read from their diagram, this method did produce many correct answers but would have been more time consuming.

There were common incorrect responses for example calculating the mode, range or mean.

Question 16

Stating the need for labelling was the successful answer most often given. Only occasionally was the second mark achieved. Many candidates identified that the number of potatoes added up to 300, but rarely showed an understanding that scaling to 360° was required. Very few candidates actually worked out the correct angles of 108°, 126°, 126° to illustrate the incorrect pie chart.

Question 23

Candidates who used a 2-way table for this question were significantly more likely to score full marks than those who chose a series of written calculations. The majority of candidates did not use words to describe the answers to their working out, so they frequently got themselves lost in a page full of numbers. Most candidates scored one mark on this question, with the majority opting for a process to find girls choosing French (44) or total number of girls (110). Of the candidates that were able to progress past a first step, most were able to go on and score full marks, however there were a number of responses seen that did not identify the correct answer from their working or table and often placed a wrong total on the answer line.

Question 23

It was pleasing to see many students plotting the required points consistently within the given intervals although many did not use the mid-interval values; upper limits were commonly used. Accuracy of plotting was generally good, but students must realise that a polygon has straight sides, not curves. Many mistakenly joined the first and last point.

Many drew histograms, which are acceptable in finding the specific points, but single points must be identified and joined with line segments.

Question 11

Using a frequency table to find the total weight was generally well answered, with most students understanding that they needed to multiply the weights by the number of people, before adding together to get the total weight. Some just added the weights in the weight column, ignoring the frequencies thus gaining no credit. Arithmetic errors cost a minority of students the accuracy mark (disappointing on a calculator paper) and some students only included 5 products, usually omitting a weight with frequency of one. Adding an extra column to the table proved very helpful for many students.
It is important for students to have experience of working with data in tables and to understand how to extract the relevant information. Centres should also encourage students to make full use of a calculator to check their answers when in a calculator exam.

Question 9

In part (a) the majority of candidates ordered the numbers successfully and went on to find the median correctly. A number of candidates calculated the mean instead.
Part (b) was well answered.
Part (c) was also well answered. Candidates were able to correctly scale the *y*-axis and then plot four bars, at the correct height, as well as label them. Those that did not gain full marks tended to lose a mark for an incorrect scale or missing bar labels or another mistake, such as misplacing the linear scale within the square, rather than on the grid lines, which sometimes led to confusion in drawing their own bars. Some candidates used the values from the table to label the axis, i.e 1, 5, 7, 9 without the appropriate scaling.

Question 12

In part (a) most candidates answered correctly. A common error was for candidates to write the size of the angle, 150 degrees, instead of merit and some candidates wrote no response here.
In part (b) the most common approach was to work out the angle for one student and then divide each angle separately, summing the results. Of those who didn't score full marks the method was usually correct and so an incorrect answer was due to an arithmetic error. Some found 2, 5 and 10 but added these to get 15 instead of 7, losing 2 marks.
The more efficient approach of a single calculation $\frac{360}{105} \times 7$ was rarely seen. A common incorrect expression was 360 ÷ 4. Occasionally candidates found the percentage for each sector but rounded too early, leading to the loss of the accuracy mark.

Question 16

It was pleasing to note that a good number of students used two-way tables in this unstructured problem and using this method often yielded full marks. Other successful approaches involved using a flow diagram for children and adults which again yielded a high success rate. Most students gained at least one mark for using the initial given information to find either the total number of adults or adult romance, children adventure and many then calculating the number of adult horror. Finding the number of children horror was more troublesome for many students not gaining full marks. One notable error was for the students to add the various totals together to get 116 and subtract from 160 and continuing to divide by two as they misinterpreted the part about two sections being equal. This gave an incorrect result of 22. Many students unfortunately, just had numbers written in the answer space not linked to anything specific.
Students should be encouraged to approach this style of question in a systematic way such as using a table or labelling when calculating values as this may allow them to keep track of the information they have found and guide them as to which information they still need to find.

Question 17

A standard question requiring students to draw an ordered stem and leaf diagram with key for given data. Almost all students attempted the question, with many scoring full marks and nearly all students gaining at least one mark. Where marks were lost it was often due to a missing or an incomplete key, not ordering the leaves, or an ordered diagram with one omission. Learners should be encouraged to count the number of digits in their answer and check that it agrees with the number of values in the initial data. Where no marks were awarded, it was often due to not demonstrating an understanding of a stem and leaf diagram, some using the number 1 as

the stem, listing all numbers as leaves or trying to complete some sort of pictogram or tally chart.

Question 6

Nearly all candidates were able to draw the pictogram accurately with the vast majority getting full marks. In part (b) nearly all the candidates managed to get at least one total correct with the errors mainly associated with the partial circles. 4 instead of 3 cakes was a common error for what a quarter circle represented. Totalling the number of cakes was generally well done with few arithmetic errors. Some of these candidates then forgot to end with a statement making their choice as to which year sold more cakes and thus missed out on full marks from an otherwise excellent response.

Question 7

In this question candidates were provided with some data and asked to draw a suitable diagram or chart for the information. A variety of different diagrams and charts were presented by candidates, the most common being a bar chart, compound bar chart or dual/comparative bar chart. Frequency polygons and pictograms were also alternative choices. A majority of candidates gave a key or suitable labels for Lena and Pavel, however candidates should be reminded that they should not use colour for differentiating between two lines or bars as scripts are marked in grey scale.
Where candidates opted to draw bar chart(s) these generally included the key or labels for Lena and Pavel, suitable labels for days and often correctly showed data for at least one person or for two days. Common errors included scales that were not linear, scales that did not label grid lines and instead labelled the grid squares, or a lack of scale but the majority of

candidates were not awarded the final mark due to failing to label the vertical axis. A number of candidates also did not start their linear scale from 0 which prevented the award of the C mark. A small proportion of candidates opted to add the data for Lena and Pavel and draw a chart for the total number of hours worked on each of the four days, as this lost some of the initial detail in the given information, only partial marks were available for the labels for days or linear scale and where the total hours per day were all correctly represented on the graph. Some superimposed one bar onto another, possibly in an attempt to draw a composite bar chart, so it was impossible to see unambiguously correct bars.

Frequency polygons were the next most common chart type after bar charts. Candidates generally had a key for Lena and Pavel, labels for days or a linear scale and showed at least 1 person or 2 days correctly on these.

A minority of candidates drew scatter graphs which were somewhat suitable given the bivariate nature of the data, but not entirely so given the small number of data points. These candidates were able to gain credit for their scale, labels for Lena and Pavel, and for plotting of the data for at least one person or 2 days correctly.

Some candidates attempted to draw pie charts, but found this challenging given the values involved and the non-calculator nature of the paper, often losing accuracy in their calculations and subsequent measurement of angles. This lead to marks generally only being awarded for the labels for Lena and Pavel and/or those for the days.

Some candidates opted to draw a tally chart which was a step back from the data as presented in the question and so did not get credit. Other diagrams that were not suitable included redrawing the table as provided in the question or with the total hours worked per day, and Venn diagrams where several aspects of the initial information were lost.

Question 15

In part (a) candidates were required to find the median from the stem and leaf diagram. The majority of candidates were able to do this accurately. A common incorrect answer was 67 which was the mode. Some candidates incorrectly wrote their answer as 6|4 leaving it written in the stem and leaf structure or 4 having not appreciated the meaning of the key.
In part (b) candidates were required to find the range. This was also well answered with many candidates able to correctly identify the highest and lowest values from the diagram and work out the range. Some candidates were able to correctly identify the highest and lowest values, but did not perform the required subtraction accurately or left their answer as 45 to 81. Where candidates had identified 45 and 81 some incorrectly gave an answer of 44 from incorrect evaluation of $45 - 81$. A minority of candidates found the answer 32 having incorrectly selected 49 rather than 45 as the lowest value or gave an answer of 8 having incorrectly interpreted the values in the diagram as single digit.
It was sometimes the case that the answers for (a) and (b) were reversed with candidates calculating the range in (a) and stating the median in (b). This scored no marks.
In part (c) candidates needed to compare the median for the adults (found in (a)) with the median for the children. This was well answered with around half of candidates able to make an appropriate comparison of the value that they found in (a), be that correct or incorrect, with the given median for children. Common correct responses identified that the adults were faster, the children were slower or that the children took more time. Even where candidates had an incorrect answer in (a) they were often able to give a correct comparative interpretation. Some candidates attempted to include figures in their comparisons, but these needed to be correct if present, so errors in arithmetic were then an issue sometimes. A common response which did not gain credit was to give the difference between the two median values or to simply restate the median values for adults and children without any comparison. A small number of candidates erroneously stated that a high median meant the

children were faster. Often responses did not clearly indicate whether it was adults or children being commented on with ambiguous references to ‘they’ being seen.

Question 6

This question contained three parts and required students to use knowledge of pictograms. Part (a) was answered very well, with a very large number of students showing they could use the key to state the number of houses for a given month.

Similarly, part (b) was also often answered well with most students being able to draw symbols to represent 11 houses for April to gain the mark. A variety of representations totalling 11 houses were seen, with students often using two full squares and predominantly an 'L' shape and, although the 'L' shapes were drawn freehand, the intention of the candidate to represent a value of 3 was almost always clear. Some drew internal lines to show the 'L' shape representing three smaller squares each of value 1 and some even added numbers indicating the value of the symbols (i.e. full squares labelled with 4). Some drew a rectangle to represent half of a large square and a separate smaller square representing one quarter of the large square. Whilst a variety of sizes in diagrams were shown, the intention was clear in the majority of responses.

Full marks were most commonly awarded on the final part of this. Some students wrote 18 on the answer line without any working, while many showed working in a variety of ways. Where working was shown but a correct answer not given, this enabled them to pick up partial marks for a valid method. It was common to see the totals for each month adjacent to each row on the diagram followed by a total or an addition for the number of houses sold in the first four months and/or a subtraction from 60. Where working was shown, errors were few and far between suggesting writing down the stages of calculations was helpful. When full marks were not awarded, it was usually due to a mistake in interpreting the key and using an incorrect value for one of the months. March tended to be read as 16 and not 12 on occasion and this led to an answer of 14, but a lack of working often led to the mark for 60 – ([Jan + Feb + Mar] + 11) not being awarded and as such, centres should impress on students the value of showing their working. Some gave 42 on the answer line as they forgot to subtract this from 60. However, these types of errors were uncommon.

Question 13

This question was answered well with a majority of students able to gain the full 3 marks. Of those that didn't, the whole range of incorrect entries was seen from 1 up to 6. Students attempting these types of questions on future papers should be encouraged to check the totals for each column and row, as this is a way to highlight any errors they have made and can therefore be corrected. It does appear that the majority of errors were caused by arithmetic errors and incorrect use of calculators.

Question 14

Drawing pie charts is clearly an area of improvement for this cohort as a minority were able to score full marks for a correct pie chart. Some were able to gain 2 marks for all 3 angles correctly calculated or for accurately drawing one correct angle on the pie chart. Most of the cohort gained no marks and common incorrect solutions often included an incorrect or no attempt to calculate the angles and if sectors were drawn on the pie chart, the angles were the same as the frequencies (30, 10, 50) or some other incorrect values. There were indications that some students had not come equipped with a protractor and a small number of students did not use the line given or drew their angles not from the centre. A few who drew a correct pie chart forgot to label it correctly, it should be noted that labelling the sectors with the values of the angles, e.g. 120, 40, 200, is not acceptable.

Question 9

In part (a) learners were asked to use the information provided regarding the total number of stickers in order to complete the bar chart. This was answered correctly by the majority of learners. Where answers were seen that were not fully correct there was often working shown which allowed for the award of part marks. Common errors included reading one of the two given bar heights incorrectly, this was often the bar height for the football players which was sometimes incorrectly given as 16 or 18.

In part (b) learners were asked to give the fraction of the 40 stickers that are stickers of tennis players and to give the fraction in its simplest form. The majority of learners were able to identify the required fraction and correctly simplify this to give the required answer. The most common reason for an incorrect final answer was to either give the unsimplified fraction or where errors were seen in the attempts to simplify the fraction. A small minority gave the fraction of stickers that were football players rather than the fraction that were tennis players.

Part (c) of the question required learners to convert between ratio and fraction notation. The majority of learners were able to correctly complete the conversion. The most common incorrect answer was $\frac{5}{4}$ where learners did not sum the parts of the ratio to obtain the denominator of the fraction.

In part (d) learners were asked to give the ratio $5:4$ in the form $n:1$. This proved challenging for learners with only a minority able to give the correct answer. Some learners made an attempt to write the given ratio in the required form but made errors when attempting to calculate $5 \div 4$, others started the process to divide but did not reach the form $n:1$. Other incorrect responses included 1:0.8 (the form $1:n$) and answers of 1.25 without $n=$ or any attempt to write as a ratio. There were a significant number of incorrect answers of $5:1$ or where n had been introduced into the ratio in some way, for example $5n:4$.

Question 11

In part (a) of this question learners were asked to use the information given to complete the two-way table about the type of film liked by adults and children. There were a good proportion of learners who could complete this fully correctly using the given information and working out the missing values. Where incorrect answers were seen these generally had the given information correctly completed in the table but had errors in working with these numbers in order to determine the missing values. Some learners were able to complete some of the given values correctly but made errors in placing some values possibly due to the need to identify both the appropriate row and appropriate column to input the values in.

In part (b) of the question learners were asked to give the probability that a person chosen at random from the 500 was an adult who said that they liked action films the best. A majority of learners were able to give the required probability. There were a significant proportion of incorrect answers also seen, common incorrect answers were $\frac{100}{280}$ (the probability of an adult chosen at random saying that they liked action films the best), or 100/150, which was awarded 1 mark for the correct numerator, or completely incorrect fractions using a variety of different numbers from the table. There were a minority of learners who had a correct answer, but made errors when trying to simplify or convert their probability fraction (in these cases subsequent working was ignored) or gave their probability as a ratio which is not an acceptable form but which does gain method marks. Learners should be reminded that probabilities should be given as a fraction, decimal or percentage.

Question 17

This question saw 0, 1 and 2 marks awarded in almost equal measure. For those that did not gain 2 marks, there were a number of ways (detailed in the mark scheme) that learners could gain 1 mark and all were seen regularly. It should be noted that frequency polygons require points to be joined with line segments – it was often seen that learners would plot the correct points but join with a curve, gaining 1 mark, centres should encourage learners to use a ruler. It was also the case that if two errors were made this would be 0 marks, for example the learner that plotted the points at the end of the intervals (e.g. 140, 160, 180, 200, 220) and joined the first and last point directly gained 0 marks. Regularly it was seen that points were not joined together when drawn at consistent intervals and gained 0 marks. Many learners drew histograms and gained 0 marks.

Question 22

This question saw the full range of marks awarded. Some learners managed to gain 3 or 4 marks, usually for two correct values for median and range and at least one correct comparison. It should be noted that simply writing the value of two medians or ranges is not enough for comparison, some sort of statement relating to their sizes like the two examples in the mark scheme is required. Some learners used a method to find the median from the stem and leaf diagram but failed to extract 57 from it, leaving the 7 circled, which was not enough to gain B1.

Question 6

In part (a) of this question, learners needed to calculate the total number of blue pens and red pens that Samina sold in June, this involved identifying the appropriate values from the table and adding them. This was generally answered well and most responses saw the correct values identified and accurately added. Where errors were seen these were usually either an error in addition (often leading to an answer of 32) or selecting the wrong values to add.

Part (b) required learners to show whether or not Samina was correct. They needed to find the number of blue pens sold and the number of red pens sold and then show whether there were more than twice as many blue pens as red pens sold. Learners were generally able to make a start to the process by finding the number of blue pens or the number of red pens, they often followed this by either doubling the number of blue pens sold or halving the number of red pens sold to find comparable values. A minority of learners chose to work out number of blue pens ÷ number of red pens to answer the question.

The most common error was to merely find the number of blue pens sold and the number of red pens sold without an attempt to find comparable values. Even when the correct decision was then made, this was not sufficient in this case as this question required the learner to show their working. The were several other learners who did show all the necessary working and reached the correct figures but did not then make the correct decision. It was also common to see correct processes which were not accurately completed due to arithmetic errors. Others found the difference between blue pens and red pens each month.

Question 7

Learners were generally able to correctly complete the bar chart in part (a). There were instances of unruled bars or bars which were slightly misaligned with the axis, but these were condoned as long as the intention was clear. Where fully correct responses were not seen many learners were able to gain 1 mark which was generally for one of the two bars being plotted correctly, most often for drawing the bar at height 8 as drawing the bar of height 3 proved slightly more challenging.

In part (b) learners needed to show that the total amount of money in the bag was less than £10. Many learners were able to work correctly with the numbers of each type of coin and

produce an accurate total of £9.60 which demonstrated the required result. There were some learners who had a fully correct method, but made errors in the evaluation or who had inaccurate money notation most commonly stating £9.60p as their final answer. A common error was to use the wrong frequency for one or more of the coins, however these learners were often able to gain 1 mark for a method to find the total amount of at least two coin types. It was not common to see learners mixing pounds and pence in their method, but where this was observed it was condoned for the method marks. Some learners did not recognise the need to work with the frequency of each coin and instead just added the four coin values. In a small number of cases learners confused money with time and worked incorrectly with 60p in a pound.

Question 18

Learners were often successful at completing the stem and leaf diagram and giving an appropriate key. Common reasons for partial credit being awarded were the stem and leaf diagram being unordered or errors/omissions in the stem and leaf diagram. Some learners used a stem of 130, 140, 150 which was accepted. Completion of the key was also done well with many learners able to give an appropriate example to show how the key worked. Some learners only gave a partial key where they showed e.g. 13|5 but did not indicate what this represented.

A common incorrect answer was to use a stem of 1 which was not suitable as all of the values should then be in a single row, but could still gain credit for a correct key provided it was consistent with their stem and leaf diagram. Some learners were not aware of what was required for a stem and leaf diagram and drew tally charts or pictograms.

Question 12

Responses to this two-way table question were very good, with many gaining full marks for a fully correct table or partial marks for a partially correct table. Learners were usually able to correctly place the information given in the question in the table, and where mistakes were made it was often when calculating the missing values. Centres should encourage learners to check their work in these questions, as it is relatively easy to check that the additions in a two-way table work both vertically and horizontally to determine whether mistakes have been made.

Question 14

n part (a), many candidates demonstrated the necessary skills to calculate angles and draw the pie chart accurately. However, a significant number showed no working and only received marks if the angles were drawn correctly; otherwise, they scored zero. Some charts with correct angles earned only two marks because they lacked proper labels—Spanish and Mandarin needed to be written on the correct sectors, not just indicated by angle size. When more than two sectors were drawn, only the method mark could be awarded, as both accuracy marks were unavailable according to the additional guidance.

In part (b), a statement relating to a lack of information about population size was required to gain credit, with the mark scheme showing many acceptable examples of suitable responses. Responses that did not refer to the total populations did not gain the mark. Whilst it was possible to give a valid explanation with a decision of yes, a common incorrect response was to say that the statement was correct because the angle is bigger.

Question 22

To gain 2 marks, all five points needed to be plotted accurately and joined using straight line segments. Where full marks were not awarded, 1 mark could be gained for a frequency polygon with a single error. Common responses that gained 1 mark included:

- Accurate plotting of points but joined with a curve
- Accurate plotting of points but not joined
- One point plotted incorrectly
- First and last points joined directly
- All five points plotted at correct heights, consistent within the intervals (typically at end points), and joined with line segments

Responses that gained 0 marks often showed a lack of understanding of the frequency polygon method. Some produced a histogram or similar alternative. Others joined points in the wrong order, for example connecting the 1st to the 3rd to the 4th to the 5th, and then linking the 1st and 5th to the 2nd to form a triangle.



Examiners' Report
Principal Examiner Feedback

November 2020

Pearson Edexcel GCSE (9 – 1)
In Mathematics (1MA1)
Foundation (Calculator) Paper 3F

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November 2020
Publications Code 1MA1_3F_2020_ER
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GCSE (9 – 1) Mathematics – 1MA1
Principal Examiner Feedback – Foundation Paper 3

Introduction

The overall quality of the presentation of work was good. However, students need to read the questions carefully. There remain a concerning number of cases where students copy down the wrong figures from the question, mis-copy their own figures, or round figures almost randomly. Equally another error sometimes occurs when students prematurely round or truncate figures, either their own figures or figures from the calculator, which usually result in lost accuracy marks and could also make questions more difficult than they were designed to be.

Approaches to questions that required some interpretation or explanation were inconsistent. Questions 10 and 21 were answered well, but poor attempts were made in questions 15 and 26. On too many occasions students included contradictory or incorrect statements, which cannot be credited.

Within a broad range of questions, the paper was able to discriminate well. Weakest areas continue to be the application of ratios, scales and rates, but also algebraic manipulation and problem solving. Most demonstrated good use of a calculator, though on some occasions it was clear that they did not have an understanding of the way in which their calculator worked or did not have one at all, such as in question 9.

Questions which had a slightly unexpected approach, that is required more thought, caused immediate problems for many, even in the earlier part of the paper. This includes questions 18, 20 and 24. Question 25 to 29 were the more challenging questions for those striving to demonstrate ability at the highest grades available, and a significant proportion of students therefore failed to score on these questions.

There were far fewer attempts using trial and improvement approaches. These mainly occurred when students showed evidence of not having a calculator, mainly evident in questions 15, 18, 19 and 20 where non-calculator methods were also seen, such as multiple additions.

The inclusion of working out to support answers remains an issue for many; but not only does working out need to be shown, it needs to be shown legibly, demonstrating the processes of calculation that are used. This is most important in longer questions, and in “show that” questions.

Report on Individual Questions.

Question 1

This was a poorly answered question. Most students gave the correct answer of 3 but 300, 30 and 3000 were frequently seen.

Question 2

A well answered question with nearly all giving the correct answer of 8.

Question 3

This was not always answered correctly.

Question 4

There were few incorrect answers in this question.

Question 5

This was very well answered with few failing to gain the mark. The most common error was the absence of one of the numbers.

Question 6

A very well answered question. There were a few who gave the answer of 4 to part (a).

Question 7

Students were generally very successful with this question with most obtaining full marks. Those achieving partial marks tended to mis-read the shaded section and recorded the fraction unshaded instead leaving their answer as $\frac{1}{4}$. A significant minority failed to give their answer in its simplest form, usually leaving the answer as $\frac{12}{16}$.

Question 8

This question was generally well done with the majority dividing 200 by 25 (some with multiple additions of 25) and then completing the process of 9.75 × 8 and giving the correct answer 78. Some students preferred to list eight lots of £9.75. The most common errors were students multiplying the cost by 200 or by 25.

Question 9

Parts (a) and (b) were not always answered correctly, with students having difficulty with the order of operations on their calculators.

It was rare to see any correct answers to part (c). Knowing the meaning of the term “reciprocal” is clearly a weakness in students.

Question 10

Most students got the marks in parts (a) and (b).

In part (c) students were able to explain that the drop in the first 3 minutes was steeper than the last 3 minutes. Some struggled to articulate this and some forgot to agree and imply that Pam was correct. There were a wide variety of values presented by students, although this question assessed the interpretation of the graph rather than the accuracy of reading values. Students generally used suitable values to explain their reasoning. Some students didn’t use the graph at all but tried to explain that water cools more quickly when it is hotter.

Question 11

Many responses achieved full marks. Many managed to use the fact that angles in a quadrilateral sum to 360 or found the angle on the straight line to y was 70 degrees and score one mark. Not all students who correctly calculated angle *PSR* were able to complete this question correctly, deciding to go off in all sorts of related incorrect calculations. Some of the weaker students knew that angles on a straight line totalled 180° but chose to use angle *QPS* with angle y to sum to this total.

Question 12

Part (a)(i) was well answered. In parts (a)(ii) and (b) it was clear students did not properly understand the meaning of "term". This was evidenced by statement involving algebra, "nth term", "n –5" and numbers not relating to the sequence given in the question.

Question 13

Many students added up the numbers that they saw on the diagram to get an answer of 26. Many more managed to score at least one mark on this question as they identified the length of one of the missing sides, usually on the diagram. For some reason finding 2cm was much more prevalent than finding 6cm. Some then forgot to find the missing length of 6cm leading to an answer of 28. The majority understood the meaning of perimeter, but some divided the shape into rectangles and added together the perimeter of both rectangles. The other common mistake was trying to find the area.

Question 14

In part (a) most students understood the need to collect like terms and it was often done successfully. If full marks were not awarded, students usually achieved one method mark, usually for the $5x$.
The negative sometimes caused problems when collecting the y terms. Common errors seen included $6xy$ and $5x^2 \pm y^2$.
Part (b) was well done by many with the answer 3 on the answer line, though a formal algebraic approach was not seen very often, students preferring to show $22 - 7 \div 5$. Some showed "–7" written by the equation but this was not credited unless the next stage was shown by, for example, writing $5p = 15$. Few attempted to divide by 5 as their first step. The most common incorrect answer seen was 10 from subtracting the 5 and 7 from 22.

Question 15

There were some good attempts at this question, encouraging since there were several steps needed to get to the answer: division to get the number of packs and rounding 7.5 to 8 before calculating the cost. Conclusions were well stated. The common error was to work out the individual cost of the batteries in each shop and then find the cost of 30 which clearly demonstrated misunderstanding about the packs.

Part (b) was usually well stated with 'No' and a clear reason. Most calculated the cost of 30 individual batteries of £12 and £13.50 and stated 'No, shop A is still cheaper'.

Question 16

In part (a) the majority wrote the correct answer on the answer line. Some went on to convert their answer to a decimal which was unnecessary. It was also pleasing to see most students using the

correct notation for probability with only a minority using the incorrect notation of a ratio. Of those not gaining both marks, most earned M1 for $\frac{5}{n}$ or $\frac{m}{11}$.

In part (b) a common incorrect answer was 0.3, but the majority of students gave the correct answer of 0.7, which was sometimes written as an equivalent fraction.

Question 17

The majority of students attempting this question gained full marks. There were many who gained 1 mark for drawing only one 6cm line correctly, though quite a few struggled to draw an accurate isosceles triangle. Though they were not required in this question, there was very little evidence of construction lines/arcs drawn; it seemed most measured using their rulers.

Question 18

Many students secured one mark for providing an accurate conversion using the graph. However, others drew lines on the graph, not always correctly, but failed to take any accurate readings from these. Of those that did, most went on to complete the method, but many of these confused their $ with £ and so lost the method mark. Other students chose to take their initial reading near the origin, for instance using £5 = $6, which by the time they had multiplied it up to $345 was too inaccurate to give an answer within the range allowed. There was some misunderstanding of the scale on the $ axis, with some students assuming 1 small square = $1

Question 19

In part (a) to achieve both the marks, students needed to understand through proportional reasoning that the number of tuna sandwiches represented 40% of the total sold. Many students were not able to demonstrate this and as such scored no marks. There were some who adopted a bar modelling approach e.g. stating 40% = 56 so 20% = 28, and adding 56 + 56 + 28.

Part (b) was answered slightly better, but still demonstrated that students need more practice of ratio and proportion. Where students showed some understanding of what was required but chose to use a percentage of 18 to scale up were often not able to achieve a solution that was accurate enough.

Question 20

Students that were able to demonstrate some understanding of the context were rewarded with one of two process marks if they able to sum the total of money (200) that Akhtar, Ben and Carl had without the £10 notes or used the mean amount to calculate the total of all the money (240). After scoring one or two process marks there was a variable understanding of how to use these values to solve the problem. Of those who made mistakes many appreciated that the answer had to be an integer and rounded their mistakes rather than reflecting that there had to have been an error and a further check of their work was needed.

Question 21

Part (a) was answered well, with many students gaining the mark. The most common incorrect answer was $\frac{25}{50}$, a probability statement rather than a statement of the number of times.

In part (b) some students thought that the answer was Paula because "10 times was enough" as her approach was quicker. Lots of students had the right idea that the more trials, the more reliable your results, but some failed to actually say "Simon, because…" A common mistake was just talking about 100 throws and not making comparisons.

Question 22

This question was attempted by most students but very few correct plan views were seen. Most students incorrectly drew a net or a side elevation involving a square with a triangle attached. Out of the ones who scored any marks, most scored one mark for a square with sides 6cm, but without the diagonals drawn.

Question 23

Part (a) was not well answered. n^{15} was a common incorrect answer.

In part (b) c was usually shown correctly (frequently written as c^1 but often paired with d^4). Most achieved one mark for c or (less likely) d^3. There were a significant number of correct values for c found from an incorrect method.

In part (c) many students were unsure where to start and a common incorrect answer given was $2.5x > 7$. Of those students who did start to approach the question correctly, many ignored the inequality sign throughout the process getting $x = 2.8$ or $x = \frac{14}{5}$ and as a result could not gain the accuracy mark.

Question 24

Most students attempted this question but very few achieved full marks. The distance, speed, time triangle did not help in this question; students always seem to make more errors at this level when using it rather than taking an everyday approach to the problem. Some added the distances together and the speeds together then divided by 2. Quite a few students gained one mark, but more students gained two marks for finding the times as decimals and adding the two times but failing to convert the times correctly and ended up with 2 hr 75 mins or 3 hr 15 mins which were the most common answers seen.

Question 25

Error intervals remain a weakness and was poorly attempted. Some were able to correctly give 9.35 but rarely gave 9.45; a few 9.44 but not 9.4499...

Question 26

Many were able to secure the first process mark for finding the area of one of the lawns (45 m^2 or 140 m^2) or the amount of seed available (10kg) but did not proceed any further with many reasoning incorrectly that if 3kg covered 5 × 9 area, then 6kg would cover 10 × 18, more than is needed. Other students were successful in gaining the second process mark mainly for the coverage of 1 kg of grass seed ($15m^2$). The most successful approaches seen where students were able to reach the correct conclusion were finding the amount of grass seed needed (9.3…kg) and comparing it with 10kg or finding the area that could be seeded with 10kg ($150m^2$) and comparing it with $140m^2$.

Part (b) required reasoning supported by correct figures and as a result, students were not successful in gaining many marks.

Question 27

Part (a) was generally answered well, and most students were able to write at least two correct probabilities on the tree diagram, sometimes writing these as equivalent fractions of $\frac{2}{4}$2/6 and 4/6. Some students chose to try to use decimals for this problem but were not able to score any marks due to inaccurate approximations of $\frac{1}{3}$.

Having perhaps achieved one or both marks in part (a) many students lacked the knowledge that they needed to select the correct branches and multiply the fractions together and the few that did were rewarded with the marks in part (b).

Question 28

There were very few correct answers in part (a). There seemed little evidence of an understanding that the solutions could be read from the graph. A significant number attempted an algebraic solution, but their algebraic abilities were insufficient for such a task.

In part (b) there were a few who got full marks but for those who knew to read from the intercepts often included 2 with 0.6 and 3.4. Some spoilt their answers by writing the two values as coordinates. Other errors included those who attempted to substitute values into the equation, then plot the points on the graph, using algebraic solving/factorising methods or stating the *y* value at the minimum point.

Question 29

Many started off knowing that they needed to multiply the dimensions 6, 4 and 10 but many failed to take into account that the end shape was a triangle and division by 2 was required. The biggest failing, after calculating the volume correctly, was to divide by 0.8 getting the answer 150. For those students that only omitted division by 2 there was a special case mark for the answer of 192.

Summary

Based on their performance on this paper, students should:

- accurately transcribe figures taken from the question, and taken from their own work
- avoid rounding or truncating answers, and to use the most accurate values in subsequent calculations
- ensure that their work is legible for examiners to consider awarding marks. For example, avoid any possible confusion when writing 1s and 7s, when writing 4s and 9s, and even when writing 0s and 6s.
- ensure that they include working out to support answers
- work on algebraic manipulation and derivation, and application of ratios, scaling and rates in preparing for future examinations.
- learn the meaning of technical terms such as “reciprocal”, the “term” of a sequence and error intervals
- continue to need practise answering response type questions where a written explanation is required.

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Examiners' Report
Principal Examiner Feedback

November 2022

Pearson Edexcel GCSE (9 – 1)
In Mathematics (1MA1)
Foundation (Non-Calculator) Paper 1F

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November 2022
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GCSE Mathematics 1MA1
Principal Examiner Feedback – Foundation Paper 1

Introduction

The paper offered an opportunity for students of all abilities to demonstrate their understanding of a variety of mathematical concepts.
The early questions acted as a good confidence building way into the paper, with many students gaining a good proportion of the early marks.

Lack of careful reading of some of the questions was a cause for concern; particular ones are quoted in the summary below. Also worrying is the number of arithmetical errors that featured in many students' work. Simple application of the four rules was found wanting on many occasions. For example, 10000/8 being seen as 8/10000. Students should be encouraged to check working before being totally satisfied with their answers.

Some students were clearly avoiding tackling questions that involved algebraic techniques. These attempted trial-and-error methods from quite early on in the paper, even for the simpler questions where an algebraic approach was straightforward.

The quality of handwriting from some candidates made their responses difficult to read. Students are advised to avoid rushing through their work.

Areas of the curriculum that need more attention are, Geometric reasoning (Q9b), Describing transformations (Q11), Equation of a straight line (Q11bii), Fractions (Q20), Indices (Q21) Comparison of ratios (Q24) and Factorisation of polynomials (Q26b).

Again, it was pleasing to see many students clearly showing their working and utilising their communication skills when required. This continues to be an area of improvement.

Report on individual questions

Question 1. This first question was generally well answered and served as a good introduction to the paper. Correct answers of $\frac{3}{10}$ or $\frac{30}{100}$ were the most common.

Question 2. This question was usually answered correctly although an answer of 6 (3×2) was a common mistake.

Question 3. Another well answered question with few mistakes. It was pleasing to see most able to follow the correct order of operations.

Question 4. Although 10 and/or 12 were seen more often than not, a number of students failed to gain the mark by offering extra, incorrect values. 6 being the most common seen.

Question 5. Many students failed to score in this question by not simplifying the given expression fully. $3w \times 5t$ and $15 \times wt$ were popular partial simplifications gaining no marks.

Question 6. It was very pleasing to see so many students gaining good marks on this multi-step question. The vast majority gaining 2+ marks. In general, marks were lost through not reading the question carefully. Often just one child was considered, or two adults were included. Another common mistake was to omit the cost of petrol while in other cases it was seen as a cost for each person. Poor arithmetic often denied many full marks, mainly with the addition of two child tickets (the only non-integer), or with an inability to line up integers and non-integers successfully in a column addition method. Some gave the total cost of the trip instead of the change.

The standard of presentation of answers was lacking, in some cases, with little structure or order to what they were doing

Question 7. Part (a) was answered well, the vast majority clearly understanding the concept of mode. In part (b) also, understanding of probability scales and probability in general was good. In (ii), some simply added a cross to the probability scale, failing to quote the actual numerical probability; this gained no marks. Some students are still using terms such as unlikely in terms of describing probability.

Question 8. Part (a) was answered well, with very few failing to score the mark. Candidates performed less well in part (b) with many not collecting the like terms of $3n$ and n together as a first step. Many tried to subtract the n from both sides of the equation either resulting in $2n = 24$ (giving $n = 12$) or $3n = 24$ (giving $n = 8$). In this question, students usually scored no marks or full marks. Some used an embedded solution, with mixed success. Many candidates who achieved full marks did not attempt the algebraic approach and instead simply stated that $3 \times 6 + 6 = 24$, with a correct answer on the answer line.

Question 9. Part (a) was well answered with the vast majority subtracting 70 from 360 to get a correct answer of 290°. However, a great many were unable to give a correct reason for this answer in part (b). The most common incorrect explanation related to a circle "having 360°". Students need to be made aware that such an explanation is not acceptable. Many simply explained how they did it, rather than why e.g. "I subtracted 70 from 360". Students should be reminded that a calculation is not a reason.
In this case "angles at a point sum to 360°" or words to that effect is the reason required.
A common incorrect approach was to work with 180° rather than 360°.

Question 10. Most students correctly worked out that 5 was the greatest number of jars of coffee that could be bought for £23 in part (a). In part (b), a large number of candidates lost the mark as they hadn't read the question carefully enough, missing the word "exactly" in reference to the number of jars to be bought at half price. Many realised that Michael could now buy an extra 11th jar but then lost the mark because they answered 'yes' to the question "Is Michael correct?".

Question 11. Whilst many students correctly wrote down the scale factor of 2 in (a)(i), only a very small minority were able to pinpoint the centre of the enlargement in (ii). Many tried to position their centre either in between the two shaded triangles, in the centre of one of the triangles or on one (or two) of the vertices. In some cases, students who were able to draw lines to intersect at the point of enlargement identified it correctly but missed the mark because they also placed 'X' somewhere else on the graph.
In part (b)(i), accurate drawing of the mirror line was good. Whilst lines drawn with a straight edge are preferred, freehand, dotted or dashed lines were acceptable. In part (b)(ii), unfortunately, very few students were able to give the equation of their line. Common incorrect lines drawn were $x = 4$ or $y = 4$, which in some cases allowed a follow through mark if they stated this as their equation for (ii).

Question 12. Again with this multi-step problem in part (a), it was pleasing to see many students gaining good marks, often 2 or more. In this question, students had to find a sixth and 20% of 120 minutes. When performing calculations of this type it is important for students to show their working, eg $120 \div 6$ or $\frac{20}{100} \times 120$ so that credit can be awarded for correct method if errors are made with accuracy. In solving this problem, some students subtracted 50 from 120 to give 70 minutes and used this as the time spent playing badminton. Arithmetic errors were seen far too often from students when subtracting from 120.
In part (b), many ignored the good work they had done in part (a) and explained that Elana did not get to the café on time because she spent 2 hours at the sports centre making it 3.30pm when she left. This part followed through the working and answer in part (a) and the mark awarded if the reason and working were correct for the time given in (a).

Question 13. Part (a) was answered correctly by the majority of students, reading 60 from the bar chart. Part (b) was answered less well when a certain amount of extrapolation was required from the chart. 210 was a common incorrect answer.
In part (c), it was evident that many students weren't able to accurately read data from a composite bar chart, many reading the number of men as 90, women 200 and children 280 in 2020. The method mark here was awarded for sight of 80 (children) or 200 (men + women) used in a ratio. Many gained this mark but failed to score full marks as a result of incorrect values read from the chart. As a result of not reading the questions correctly, some students wrote an answer of 80 (child) : 90 (men) : 110 (women).

Question 14. Greater success was achieved in part (a) of this question by finding the sum of the distance travelled in one hour (54 miles) and the distance travelled in half an hour (27 miles). It was pleasing however, to see many students correctly quoting the equation distance = speed × time to solve this problem, although accuracy was often lost through incorrect use of the units of time. 54 × 90(mins) or 54 × 1.30 were common errors made.
In part (b), very few students were able to correctly convert from centimetres to kilometres. Many gained one mark for using the scale on the map correctly, 25 000 × 6. Credit was then given for a reasonable attempt at the conversion of 150 000 cm to km, usually just dividing by 1000. Most didn't seem to be clear that they had found a measurement in cm by multiplying by 25 000, those who did include units were more likely to be able to convert correctly as they often spotted that they could convert cm to m then m to km.

Question 15. The diagram proved very useful in getting one correct coordinate, for which one mark was awarded, usually $y = 1$, but rarely was a fully correct answer seen. Whilst many students did use the diagram, drawing the correct line segment, it was also rare to see the correct positioning of the required midpoint. This was often seen placed on the y-axis. There were very few instances of candidates using written methods to find the midpoint.

Question 16. Those students who attempted an algebraic solution often picked up good marks, 2 or more, for a correct expression for the perimeter and then equating it to the given value of 52. Simplifying their algebraic expression often proved more difficult and it was not uncommon to see quadratic terms creeping in. Some students assumed all the lengths to be the same and calculated 52/4 gaining no marks.
Some students correctly found the value of x and then failed to answer the question by finding $2x$, the length of DC. Poor arithmetic let many students down in being unable to divide 57 by 6 and hence not being able to achieve the accuracy mark.
Many students did however adopt a trial and improvement approach which usually cost them a great deal of time for little reward.

Question 17. Again, understanding of probability was good and many students gained the full 2 marks in part (a). One mark was awarded for sight of 100 – 30 (= 70) or a correct value for the probability of taking a blue counter. $\frac{3}{4}$ was a common incorrect answer by some of the less able students, assuming there was an equal number of coloured counters. Students should be reminded that expressing a probability as a ratio is not an acceptable form for this answer.
In part (b), the correct answer of 45 was the modal answer, with incorrect methods following no particular pattern. A common incorrect attempt was also to try to share 30 in the ratio 2 : 3.
Part (c) followed through student's answers in (b). Explanations were usually acceptable, such that 25 counters could not be shared equally between red and yellow. It should be noted that just saying '25 can't be divided by 2' gained no credit. Also, students should be aware that any calculations given as evidence in such questions need to be accurate.

Question 18. Many students were unable to make any progress in this question by not reading the question fully and jumping in to either find a half and/or a twelfth of 240 or to divide 240 by 5, then 3 then 2. Those that correctly divided 240 in the ratio 5 : 3 : 2 usually went on to gain good marks. Many scored 3 marks for finding the numbers of cans remaining, 120, 36 and 44 but were then unable to find the required percentage of cola cans remaining. Finding one number as a percentage of another is an area that needs addressing. Those that did find a percentage were often successful by simplifying their fraction of 120/200 to 60/100.

Question 19. The factorising of 500 was usually carried out with the aid of a factor tree diagram, many of which were seen to be fully correct. Failure to gain full marks was usually down to not giving their product of prime factors as powers as requested, often just leaving the factors in a list. Many arithmetical errors in the construction of a factor tree and some misunderstandings in the concept were seen where the sum instead of a product was given. Centres should emphasise here that complete tree diagrams should have each final branch ending in a prime

Question 20. In part (a), those students who dealt with the fractions and whole numbers separately often gained greater success in achieving full marks, although an answer of $3\frac{4}{9}$ was not uncommon.
Although no credit was given for simply converting the mixed numbers to improper fractions, many did so accurately and then were able to convert both to a common denominator with at least one correct numerator to gain one mark. However, the answer following this approach was often left as an improper fraction, $\frac{77}{20}$. Unfortunately, many just added the numerators and the denominators to give an incorrect answer of $\frac{17}{9}$.
Part (b) proved to be a much greater challenge for many students, many tried to concoct means of dividing $2\frac{2}{3}$ by 6 to get $\frac{4}{9}$, a few students however correctly changed $\frac{8}{3}$ to $\frac{24}{9}$ and divided this by 6 to get $\frac{4}{9}$. The most successful approach was $\frac{8}{3} \times \frac{1}{6}$ showing an ability to divide a fraction by a whole number. Some had success by transposing the problem to show that $\frac{4}{9}$ multiplied by 6 is equal to $2\frac{2}{3}$, although $\frac{24}{54}$ was often seen.
Many students seemed to not understand the requirements for this question.

Question 21. It was clear that the rules of indices are known by many students but the application of them was very poor. $(2^{-5} \times 2^{8})$ was often written as 4^3. This had to be carefully marked as 4^3 as a final answer was an acceptable Special Case answer for one mark.
Sometimes 2^{-10} or 2^{16} were seen but rarely both.
Less able students often unsuccessfully tried to evaluate the terms before finding a product or squaring and had little understanding of negative indices. Occasionally 2^3 was seen for the method mark but this was followed by 2^5. Working with negative numbers continues to be a problem with -5+8 being evaluated as 13 or -13. Many worked exclusively with the powers and did not include the base number at all; -5 + 8 = 3 was often seen.

Question 22. It was common to see the digits 128 quoted in the working or in an answer, but rarely was the fully correct answer of 0.00128 seen. Very few seemed to know the rule of finding the product of the numbers and then counting the decimal places in order to position the decimal point. Many used long multiplication techniques, usually to no avail. It was rare to see an answer given in standard form. Method marks were sometimes gained for arithmetic errors in working but with a correctly positioned decimal place.

Question 23. This question was not answered well at all. Sampling techniques were not well understood at this level. Many either multiplied 40 000 by 80 or divided by 15. Attempts to divide 40 000 by 80 often introduced arithmetic errors, some just left 500 as their answer and those that knew to multiply by 15 struggled to do so correctly. Some students tried to work with percentages which rarely gained any credit eg 15%.
Students need to be encouraged to consider the suitability of their answers as some offered answers which were greater than 40 000, the total number of cars produced.

Question 24. Students at this level find the comparing of ratios particularly challenging. The most common error in part (a)(i) was to add the values of *b* in the ratios to give a triple ratio of 1 : 9 : 5 or used some of the numbers in the given ratios and gave an answer of 1 : 3 : 5. Some using a correct common multiple often spoiled their final answer by more arithmetical mistakes. Although (i) was poorly answered many picked up marks for correctly following through with their values for *a*, *b* and *c* in part (ii).
In part (b), few students were able to make significant progress. Those who assigned values to *m*, *n* and *p* were often successful, but this was rare. The substitution of $n = 2m$ into $p = 5n$ was rare also but usually successful when seen. Occasionally answers lost the accuracy mark for an incorrect order of 10 : 1 or for including letters in their final answer, eg. 1n : 10n.

Question 25. This was very poorly answered. The formula and the force both being given meant there was only the need to work out the area by multiplying 4 by 2. Some students still think that when working with area, they need to square the values first before using them to divide into 10 000. Those who correctly worked out the area usually tried to divide 10 000 by 8, for one mark, but often then failed, again through poor arithmetic. Some stated the area as 6 (4 + 2) and therefore gained no credit.

Question 26. There were many trial and improvement attempts to answer part (a) of this question, the majority of which were unsuccessful, however a few did throw up the critical value of 6. Those following an algebraic approach were able to score one mark initially for a correct process to start a solution. Subtracting 3 from both sides was usually successful but multiplying both sides by 2 was often carried out incorrectly by omitting to multiply the 3 by 2 resulting in $5x + 3 > 36$ or $5x + 3 = 36$. A correct first step was often followed by an incorrect second step or no second step at all.
Replacing the inequality by an equality is not penalised but students must remember to replace the inequality for the final answer. Far too often an answer of $x = 6$ was given.
In part (b), the ability to factorise a polynomial was sketchy. Factorisation of the first two terms [eg. $x(x + 10) + 9$] was often seen but this gained no credit.
$(x + 10)(x – 1)$ was also a common incorrect answer seen. Common incorrect answers included $(x + 1x)(x + 9)$ or $(x + 9x)(x + 1)$

Summary

On the evidence of performance on this paper, students need to:

- take greater care when reading the questions. Performance in questions 6, 10b, 12 and 18 in particular was severely affected by this.
- take care when carrying out arithmetic operations and check their working to avoid careless errors.
- write clearly so that correct values quoted are not altered in subsequent working.
- show clear methods of working particularly in basic calculations such as finding fractions or percentages of quantities.
- set their working out clearly, crossing out working that is being replaced.
- be able to convert using metric units of distance.
- be clear on the specific wording required when giving geometric reasoning

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November 2023
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GCSE (9 – 1) Mathematics – 1MA1
Principal Examiner Feedback – Foundation Paper 1

Introduction

This paper provided good coverage across the specification and allowed students the opportunity to demonstrate their ability across the grades. Plenty of success was seen across the early part of the paper as students showed confidence picking up marks in the first half of the paper.

Challenges arose when questions contained a context and with it large amounts of text; extracting the key pieces of information and applying it using the correct mathematical processes are an area for improvement. Good amounts of working out were seen which certainly helped students, especially those which had arithmetic errors as part of their solution.

Question 21 onwards proved challenging for this cohort with very few students gaining full marks and the mode score being 0 marks on almost all questions. Nevertheless, the majority of questions were at least attempted in a bid to gain some credit.

For those questions requiring a written conclusion, most responses did have some sort of decision showing that students are well-accustomed to this sort of demand in a question.

Areas of the specification that need to be improved upon are highlighted in the list at the end of this report.

REPORT ON INDIVIDUAL QUESTONS

Question 1

A good number of students were able to give a correct answer of 6 but there were a significant number who did not and a wide variety of incorrect answers were given. The most common incorrect answers were 4 (from finding the median) and 5 (from finding the mean).

Question 2

This question was answered well with the majority of students able to give a correct answer of 31. Of those that didn't gain B1, 209 was the most common incorrect answer from adding instead of subtracting; 41 was also seen when students were unable to deal with the tens correctly.

Question 3

This simplifying question saw mixed results. The majority of students were able to give a correct answer of $12a$ but there were a variety of incorrect answers seen. Students should note that this

type of simplifying question requires no multiplication signs in the answer; $12 \times a$ and $3 \times 4a$ were often seen and gained no marks.

Question 4

Measuring angles is an area of the specification that needs attention. Although some students did gain a correct answer in range, with 40 most commonly seen, there were a whole range of incorrect answers given such as 35, 50 and 140.

Question 5

The majority of this cohort were able to gain B1 for a correct answer of 60. Of those that didn't, 50 and 150 were the most common incorrect answers seen.

Question 6

The majority of students gained 3 marks for an answer of 2300 on this question. For those that didn't it was an error in conversion which was often seen with 1 litre = 100 millilitres being the most common incorrect conversion used; these students could still gain 1 mark if they had a correct process to find the difference using one of the incorrect conversions stated in the mark scheme. Those students who converted 3 litres into millilitres were more successful than those who converted 700 ml into litres and errors in arithmetic were noted when doing 3000 – 700. A small number of students arrived at 2300 but spoiled their answer by then trying to convert to litres; this was still allowed if the student gave an answer of 2.3 litres but 2.3 on its own lost the A mark and this was seen on occasions. Some students also missed that the question was about 3 litres and instead subtracted 700 from 1 litre (1000 ml) obtained 300 ml and gained no marks.

Question 7

Part (a) was answered very well with the majority gaining B1 for an answer of 15. Some students found the difference between 1 and 5 and added this to 3. Part (b) saw less success with more incorrect answers seen than in (a), the most common being 10 from dividing 20 by 2 instead of 4. There were still a good proportion of the cohort who gained B1 for an answer of 4.

Question 8

Part (a) saw mixed results. A good number of students were able to find the correct frequencies for 2 marks. Many gave the correct frequencies in the tally column and something incorrect such as frequency/24 as a fraction which gained 1 mark. Some also confused the definitions of tally and frequency and put the information in the wrong column. It was encouraging to see that a number of students were crossing out items in the list as they entered their tally marks in the frequency table and were using the correct bar notation for recording the tallies. Part (b) was answered well with many gaining B1 for a correct answer; those that didn't often gave a number

for their answer instead of the correct word. Part (c) saw the full range of marks awarded with most students gaining full marks. Of those that didn't, the most common error was an incorrect linear scale, although these students could still gain 2 marks for labelling bars and correct height bars for their scales and many did. Students often struggled to correctly scale the vertical axis, sometimes writing the numbers between the squares instead of on the gridline or using multiples of 3 or 5 which often led to errors.

Question 9

For part (i) and (ii) the majority of students answered the questions correctly to gain 2 marks. Of those that didn't, giving the answer in an incorrect notation, such as ratio, was often the issue; students should be reminded that correct notation for probabilities are fractions, decimals or percentages. Some students gave an answer of $\frac{8}{22}$ for (ii), e.g. the probability for 'pink' instead of 'not pink'. In (iii) the majority of students gained B1 for a correct answer with 0 and $\frac{0}{22}$ given in equal measure. Incorrect answers generally involved incorrect notation such as 0:22 or worded answers, e.g. impossible.

Question 10

It was pleasing to see the majority of students gain 3 marks on this question. The most common process seen was to divide 60 by 20 and then multiply 250 by 3 to arrive at 750. The majority of students who reached this point also gave a positive decision to gain the full 3 marks. Some students used a 'build-down' process starting at 900 and subtracting 250 three times to deduce there would be 150 grams left. Some students attempted to find the amount needed for one cookie and go from there but this process often led to arithmetic errors. Common incorrect processes often revolved around arithmetic errors and a small number of students reached an accurate figure to compare but gave an incorrect or no decision. Some students worked with the other ingredients too but this was ignored as long as it did not contradict their final answer. A number of students believed doubling and then doubling again went from 20 to 60 rather than 80 and therefore gained no credit.

Question 11

Less than half of students in this cohort were able to gain 2 marks for a correct enlargement. Of those that didn't, the main error was in the height of the triangle and the positioning of the top vertex; most were able to gain B1 for a base of 6 cm. Some students misread the scale factor and enlarged the shape by a different scale factor – usually 2 – if done correctly B1 could still be gained.

Question 12

Part (a)(i) was answered well with most students able to gain 2 marks for an answer of 26. Of those that didn't, it was common to see incorrect algebraic expressions such as $6g + 20h$ and 23 + 45 was often seen. Part (a)(ii) saw less success with many students unable to make any progress with the substitution. Many were unsure as to which letters should be substituted for which values and substituting g for 38 was often seen. For those that did manage to show a correct substitution, some were able to rearrange correctly to reach an answer of 13. One commonly seen incorrect answer was $g = 26$. Students should be advised to write the correct answer on the answer, on occasions 13 could be seen embedded in a calculation but the wrong answer given on the answer line, leading to 0 marks. Part (b) saw mixed results as less than half of students in this cohort gained 2 marks. Of those that didn't, many gained 1 mark, usually in one of two ways; successfully working out 3×-3 as -9 but being unable to accurately subtract 2 or for a full substitution; common incorrect answers included -7, 7 and 11. Some students wrote notes saying 2 negatives make a positive, leading to the misconception that the negative for the 9 and the subtraction sign meant the two values needed to be added, leading to an answer of 11.

Question 13

This question saw the full range of marks awarded. Some students were able to work through the process to reach an answer of 23p or £0.23. Of those that didn't, it was common to see 2 or 3 marks awarded, in particular for students who reached 160 or 460 but could go no further. Those that earned 3 marks gave a complete process with arithmetic errors in the process. It is encouraging to see that more students are fully demonstrating their method enabling them to gain marks despite their final answer being incorrect. Centres should continue to encourage their students to set out their working in a logical order so that they can access Method and Process marks. Some students dealt with the information and started the process incorrectly such as $100 \div 3$ or started correctly e.g. $100 \div 5$ but went wrong after that such as 20 + 8 and an answer of 28p. Some students incorrectly divided £3 by 5 following their process of dividing 100 by 5, resulting in an answer of 60p or 68p (after adding 8p) whereas others mixed up units within their working, e.g. 300/100 = 3g instead of 3p.

Question 14

This question saw the full range of marks awarded. Of those students who managed to plot the correct 5 points it was usual to see this accompanied by a straight line through the points. Some students gained 2 marks, usually for a line segment through 3 correct points; students should be able to recognise that an equation of the form $y = mx + c$ produces a straight line and therefore if one point is not in line with the others it will likely be incorrect. Some students gained 1 mark for producing 2 correct points either plotted or stated in the workspace but there were difficulties in calculating y when x was negative. More than half of the cohort gained 0 marks so this is an area of the specification that needs to be worked on.

Question 15

This question saw the full range of marks awarded. The majority of the cohort made a good start with a process to find 25% of 12,000. It was common to see students using the build-up method to work out percentages of amounts but this alone could not be credited with method or process marks if arithmetic errors were made and the process is not complete e.g. all steps seen such as 10% = 12,000 ÷ 10 = 1,200. Many then picked up the 2nd process mark for subtracting the deposit from 12,000 and also the 3rd for a complete process. It was common to see the accuracy mark not gained as students were unable to carry out the arithmetic for the division; 405 and 45 were commonly seen incorrect answers. Some students were not able to gain the first P mark but were able to gain the second and third P mark for a correct process using their deposit value and this was often seen. 12,000 was often misread as 1,200.

Question 16

Around two thirds of this cohort were able to gain 2 marks by reaching a value to show that Shah had passed the exam, usually 42 or 75(%). Some students had a correct method but could not carry it out accurately. Others were not able to gain any marks as they set up a fraction such as $\frac{45}{60}$ but were not able to go any further. Some students reached 42 or 75 but failed to interpret the results correctly, often saying that Shah did not pass the exam.

Question 17

The majority of students were able to gain at least 1 mark for correctly inverting the second fraction and multiplying. It was common to see the second mark gained too, usually for reaching $\frac{18}{5}$. Students who attempted to find a common denominator, e.g. $\frac{18}{30} \div \frac{5}{30}$ often made no further progress. The final step proved to be the most challenging for this cohort but some were able to successfully convert to a mixed number. Students should read the demand of the question carefully as 3.6 given as an answer was seen.

Question 18

The majority of students opted to use column multiplication for this arithmetic question. Some students managed correct place value in their structure and a good number of those managed to reach the digits 1512 to gain the first accuracy mark and place the decimal point correctly to the gain the full 3 marks. Common errors seen were incorrect place value in the columns, as well as incorrect arithmetic when adding the columns, usually arriving at the digits 378 or in trying to break down the components but only using 6 × 2 and 0.3 × 0.4, giving an answer of 13.2. Some students reached 1512 but were unable to place the decimal point in the correct place; centres need to continue to encourage students to use approximation to decide on a sensible place for their decimal point.

Question 19

It was rare to see a correct answer in (a)(i) with incorrect answers of 0 and 5 seen often. (a)(ii) also saw little success with the majority of students gaining B0; common incorrect answers included 0.05, −10 and −25. Part (b) saw mixed results, some students were able to make a correct first step, usually adding the powers for the numerator to reach 2^9. From there students either went onto gain 2 marks for a correct answer or incorrectly simplified, with $2^9 \div 2^3 = 2^3$ most commonly seen. A good proportion of the cohort gained no marks, making an incorrect first step such as $2^5 \times 2^4 = 4^9$ or $2^5 \times 2^4 = 2^{20}$. Some students also evaluated the terms as ordinary numbers and worked from there; if 64 was reached this gained M1 and was seen regularly.

Question 20

Part (a) saw most students make a good attempt at a factor tree. A good number of students were able to complete their factor tree accurately and also write their prime factors as a product. The factor tree was attempted by most students and well set out. There was a good understanding of the need for prime factors and very few included 1. Of those that did not gain 2 marks, common errors included incorrectly considering 39 as a prime number and arithmetic errors when considering the next pair of prime factors. For part (b) it was more common to see 1 mark gained rather than 2. Students were able to produce either the prime factors of 130, at least 4 factors of 156 or 130 or a common factor of 156 and 130. Of those students who gained no marks, finding the lowest common multiple was the most commonly seen incorrect method.

Question 21

Part (a) saw the full range of marks awarded. Some students completed a fully correct process to reach an answer of 3.5 or equivalent. Of those that didn't, some reached as far as $14 \div 4$ but could not follow the process through with 3.2 quite often seen as the result of the division; students and centres should note that $\frac{14}{4}$ gained full marks. Some students were able to find the total length of the 5 sticks but made no further progress. There were also a good number who did not manage to make a correct first step and gained 0 marks; a common error was to calculate 4×7 or 4×4.2 rather than 5×4.2. Part (b) saw little success as most students gained no marks, with common incorrect responses centring around the mean increasing or the length of the other 4 sticks being reduced.

Question 22

It was rare to see a fully correct construction and 90° angle at *P* on this question. Almost all students on this paper did not know what arcs were required. Many students did however gain 1 mark for drawing a 90° angle at *P* without the correct construction lines.

Question 23

Very few students were able to gain full marks on this question. A small number made a positive start and gained one of the first two P marks, the equations most commonly seen were $x = 2y$, $2x + y = 180$ and $y + w = 180$. Division by 3, rather than 5, of the 180° in the triangle was commonly seen. Most students understood the correct angle facts for angles in a triangle / on a straight line. Many students ignored the fact the triangle was isosceles and calculated the angles as if it was an equilateral triangle, giving 60° angles which led to $180 - 60 = 120$ as the incorrect answer. Many students attempted to assign values to x and y, these values were usually incorrect but if the correct values were seen this usually led to a correct value for w as well.

Question 24

This was another challenging multi-step question for this cohort; the majority gained 0 marks. Some were able to make a correct start and set up an equation in x, although some failed to include the x from shelf **A**. Progress from there required a correct process to solve their equation and substitute the value for x into one of the expressions for shelves **B** or **C**, any students that did this successfully often gained the 3rd P mark as well for 7500 ÷ "25". It was rare to see any students get as far as the 4th P mark but those that did usually went on to gain full marks assuming their arithmetic had been correct. There were many completely incorrect solutions seen such as expanding $(3x + 1)(2x - 5)$ or setting $3x + 1$ equal to 7500 and going from there.

Question 25

Those that knew the density, mass, volume formula generally scored 2 marks. Of those that did not gain 2 marks, most scored 0 for incorrect use of mass and volume, with the most common error being to multiply 27 and 10 instead of divide. Other incorrect methods involved trying a volume unit conversion, confusing units^3 with 10^3 and dividing 27 by 1000, and being unable to choose between m/v and $m \times v$ and stating both.

Question 26

It was common to see students gain the first method mark for rounding one of the figures appropriately, 6 or 8 on the numerator being seen most often. The majority then struggled with the next step which was to carry out an accurate calculation. Some were able to reach the digits 16, from attempting 48 ÷ 0.3 but resulting in incorrect place value. Some students attempted to work out the accurate calculation and then round the answer, gaining no marks. A few students were able to deal with the decimal value of 0.3 in the denominator by multiplying both the top and bottom of their fraction by 10. This is a useful skill for centres to continue teaching their students but in general dividing by decimals is a skill that needs more practice. Some students rounded 0.26 down to 0 which led to 48 ÷ 0 and were confused with what to do with the calculation.

Question 27

For part (a) there were many good attempts to expand the brackets but these attempts rarely resulted in credit being awarded. Common errors included $6x$ or $5x$ instead of $6x^2$ and incorrect signs being used. Those students using the grid method to expand the quadratic were usually successful at gaining at least 1 mark. In part (b) a small number of students were able to give a correct factorisation. Some students who gained B0 were able to give a pair of brackets with the product of the constants being -16, such as $(x + 2)(x - 8)$.

Summary

Based on the performance on this paper, students/centres should work on:

- measuring angles accurately.
- improving numeracy skills, including division skills for integers and decimals, multiplication skills for decimals.
- the interpretation of problems involving ratio.
- the formation of algebraic equations and solving them along with subsequent substitution to apply to problems in context.
- drawing a straight line graph by correctly calculating a table of values.
- using equilateral, isosceles and right-angled triangles to solve angle questions.
- encouraging students to show a full method for percentage calculation, noting that before method marks can be awarded a full explanation of each step has to be shown. If the answer is just stated then process marks will be lost if there are any arithmetic errors.
- encouraging students to set out their working using logical steps.
- encouraging students to read the question carefully so that they understand what they are required to do and what format the answer should be stated in.
- encouraging students to use approximations to check if their answers are sensible.
- encouraging students to set their work out in an orderly fashion.
- improving the expertise and accuracy required in geometric constructions.

and

- in questions requiring finding the prime factors of a number, encourage a more structured approach of dividing the number by the smallest prime numbers successively until the result was a prime number.
- ensure students know common metric equivalents from the specification, from one unit to another.
- practise arithmetic processes involving negative numbers.

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