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GCSE MATHS

Ratio, proportion and rates of change

Edexcel 1MA1 | Subtopic collection Topic 33

Compound interest, growth and decay

Foundation tier

Answers and examiner comments

16	2012-2024	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
17		$\frac{3}{100}\times500\times 4$ OR $\frac{500\times3\times T}{100} = 60$ $T = \frac{60\times100}{500\times3}$	4	3	M2 correct method to calculate simple interest over 4 years eg, $\frac{3}{100}\times500\times 4$ or "15" $\times$ 4 (M1 correct method to calculate interest over one year,eg $\frac{3}{100}\times500$ oe or 15 seen or 515 seen) A1 cao OR M1 for subs into $\frac{PRT}{100} = I$, eg $\frac{500\times3\times?}{100}$= 60 oe M1 for 15T = 60 or attempt to rearrange, eg, 1500T = 6000 A1 cao SC B1 for 4 from compound interest methods

Original question 15

The full source mark scheme begins on page 24. Use the original paper code, tier and question number shown above.

Original question 9

The full source mark scheme begins on page 41. Use the original paper code, tier and question number shown above.

Original question 18

The full source mark scheme begins on page 53. Use the original paper code, tier and question number shown above.

21		4	3	M1 $\frac{4.5}{100} \times 300$ (=13.5) or $\frac{104.5}{100} \times 300$ (=313.5) oe M1 50 ÷ "13.5" (=3.7) or at least 3 repeated addition of "13.5" A1 cao SCB1 for $1.045^n \times 300$

5MB3F/01 June 2015

16			600	3	M1 0.04 × 5000 (=200) M1 3 × "200" or sight of 5600 A1 cao

Original question 22

The full source mark scheme begins on page 67. Use the original paper code, tier and question number shown above.

Question	Answer	Mark	Mark scheme	Additional guidance
23 (a)	Ben (supported)	P1	shows how to work interest out for one year eg 2000 × 0.025 (= 50) **or** 1600 × 0.035 (= 56) **or** 150 **or** 168 **or** 2000×1.025 (= 2050) **or** 1600 × 1.035 (= 1656)	Throughout accept figures ±1 pence which do not need to be presented in money notation (to 2dp) or with monetary symbols.
		P1	shows compound interest calculation for one account eg 2050→51.25 **or** 2101.25→52.53 **or** 1656→57.96 **or** 1713.96→59.99 eg 2000×1.025^3 (= 2153.78) **or** 1600 × 1.035^3 (= 1773.95)	Award mark for a correct process shown, for which these figures can be taken as implying the process.
		P1	shows complete compound interest calculation for both accounts eg 2000×1.025^3 (= 2153.78) **and** 1600 × 1.035^3 (= 1773.95) OR one interest stated correctly eg 153.78 **or** 173.95	As above, award mark for both correct processes shown for both accounts, which these figures can be taken as implying the process.
		C1	Ben (shares) supported by 153.78 **and** 173.95	Accept an answer of "shares".
(b)	conclusion	C1	conclusion (ft) eg no change, shares now 182.5… **Acceptable examples** no since shares/Ben now 182.5 Still Ben since 182.5 > Ali No; he only gets 8.57 more No; he gets 68.56 instead of 59.98 (3rd yr) No; Ben already gets more interest, he would just get even more **Not acceptable examples** no shares now 182.5 Still Ben since less than Ali 182.5 > 153.78 no; he needs 20.17 more	Conclusion needs to be supported. ft is from part (a); calculations carried out as part of (b) need to be correct for the comparison to be valid.

Paper: 1MA1/2F

25	12272.70 12272.71 or 12272.72	M1 M1 A1	for evidence of using a correct first step eg 200000 × 0.015 (= 3000) or 200000 × 1.015 (= 203000) for evidence of a compound interest method eg 203000 × 0.015 (= 3045) or 203000 × 1.015 (= 206045) **or** 206045 × 0.015 (= 3090.675) or 206045 × 1.015 (= 209135.675) **or** 209135.675 × 0.015 (= 3137.035...) or 209135.675 × 1.015 (212272.710...) **or** 200000 × 1.015^t, $t \geq 2$ for 12272.7(0) or 12272.71 or 12272.72 SC B2 for 212272.7(0) or 212272.71 or 212272.72	 values may be rounded or truncated to 2 dp

Paper: 1MA1/3F

26	600.74	M1 M1 A1	works out decrease for one year, eg 679 × 4 ÷ 100 (=27.16) oe **or** 679 × (100 – 4) ÷ 100 (= 651.84) oe for compound method, eg 679 × "0.96"^{t}, $t \geq 2$ **or** "651.84" × "0.96" (= 625.76..) or "651.84" × "0.04" (=26.07) **or** for answers in the range 600.71 to 600.74 exclusive accept 600.71 **or** 600.72 **or** 600.73 **or** 600.74	Implied by 679× 0.12 (=81.48) or 679 × 0.88 (=597.52) Values may be rounded or truncated If the correct answer is seen and the difference found award M1M1A0

Paper: 1MA1/2F

23	7318.15	M1 M1 A1	for a correct first step eg working out increase for one year 7000 × (100 + 3) ÷ 100 (= 7210) oe **or** 7000 × 3 ÷ 100 (= 210) oe **or** find the multiplier for both years eg (100 + 3) ÷ 100 × (100 + 1.5) ÷ 100 (=1.04545) for a compound method, eg 7000 × (100 + 3) ÷ 100 × (100 + 1.5) ÷ 100 oe **or** "7210" × 1.5 ÷ 100 or (= 108.15) oe cao	7315 or 315 implies M1 318.15 implies M1M1A0

Question	Answer	Mark	Mark scheme	Additional guidance
27	Rachel supported	P1	for process to begin to work with percentage for year 1 for Tamsin or Rachel, eg 150000 × 0.04 (= 6000) oe or 150000 × 1.04 (= 156000) oe **or** 160000 × 0.015 (= 2400) oe or 160000 × 1.015 (= 162400) oe	May be implied by 12000 or 4800 or 162000 or 164800
		P1	for process to use compound interest for Tamsin or Rachel, eg "156000" × 0.04 (= 6240) oe or "156000" × 1.04 (= 162240) oe **or** "162400" × 0.015 (= 2436) oe or "162400" × 1.015 (= 164836) oe **or** 1.04^2 (= 1.0816) or 1.015^2 (= 1.030225) **OR** for process to begin to work with percentage increase for Tamsin **and** Rachel for one year, eg 150000 × 1.04 (= 156000) oe **and** 160000 × 1.015 (= 162400) oe	values may be rounded or truncated to 3 sf May be implied by 162000 **and** 164800
		P1	for full process to find figures to compare, eg Tamsin for 2 years **and** Rachel for 2 years eg 150000 × 1.04^2 (= 162240) oe **and** 160000 × 1.015^2 (= 164836) oe **OR** Tamsin for 2 years **and** Rachel for 1 year, eg 150000 × 1.04^2 (= 162240) oe **and** 160000 × 1.015 (= 162400) oe	Other comparisons are possible
		C1	for Rachel with supporting figures, eg 162240 **and** 164836 **or** 162240 **and** 162400 **or** other valid conclusion with supporting comparable figures	Note that the figure used to compare for Rachel can be the figure after 2 years or after 1 year

24	4811.20	M1 A1	for full method for one year, eg 4500 × 1.034 (= 4653) oe for 4811.2(0)	Can be implied by 4806 or 9306 Accept 4811.202 and 4811.21

15	525	M1 A1	for method to find the interest after one year, eg $3500 \times 2.5 \div 100$ (= 87.5) oe **or** 0.025×6 (= 0.15) oe **or** for a complete method, eg $3500 \times 2.5 \times 6 \div 100$ oe **or** for 4025 **or** 2975 cao	May be implied by, eg 3587.5(0) Award M1 for 3500×1.025^n

Paper: 1MA1/2F

Question	Answer	Mark	Mark scheme	Additional guidance
25	29 775	P1	for evidence of using a correct first step eg 25 000 × 0.06 (= 1500) or 25 000 × 1.06 (= 26 500)	
		P1	for evidence of a "compound interest" process eg "26 500" × 0.06 (= 1590) or "26 500" × 1.06 (= 28 090) **or** 25 000 × 1.06^t, $t \geq 2$	
		P1	for a complete process eg 25 000 × 1.06^3 (= 29 775.4)	P3A0 is implied by 4775 or 4776 or 4780 or 4800
		A1	for 29 775 or 29 776 or 29 780 or 29 800 SCB1 for 3000 or 4500 or 28000 or 29500 seen if P0 scored	

26	247.4(0)	M1 M1 A1	for a method to find the value of the investment or interest after 1 year, eg 4500 × 1.018 (= 4581) **or** 4500 × 0.018 (= 81) for a method to find the value of the investment after 3 years, eg 4500 × 1.018^3 (= 4747.4...) **or** "4581" × 1.018 (= 4663.45...) **and** "4663.45..." × 1.018 (= 4747.4... or 4747.39...) accept 247.39 SCB1 for 243 or 4743 if M0 scored	May be seen in more than one calculation Award of this mark implies the first M1 Sight of 83.94... implies M2

Paper: 1MA1/3F

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Mark Scheme (Results)

March 2013

GCSE Mathematics (2MB01) Foundation
5MB3F (Calculator) Paper 01

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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.

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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

5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		$\frac{1}{10}$	1	B1 for $\frac{1}{10}$ or equivalent fraction
	(b)		0.25	1	B1 for 0.25
2	(a)		35.91	1	B1 for 35.91
	(b)		1.2	1	B1 for 1.2
	(c)		6.859	1	B1 for 6.859
	(d)		1.6	1	B1 for 1.6
3	(a)		3	1	B1 for 3
	(b)		5.8	1	B1 for 5.8 oe
	(c)		85	1	B1 for 85
4	(a)		hexagon	1	B1 for hexagon
	(b)		5	1	B1 cao

5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
5			No with (£)120 & (£)130 or (£)10 difference	4	M1 for correct method to work out morning sales of the daffodils or of the tulips eg 75 × 0.8 (= 60) eg 50 × 0.9 (= 45) eg 105 M1 for correct method to work out total afternoon sales eg (120 – 75) × 0.2 + (80 – 50) × 0.2 (=15) eg 9 + 6 (=15) M1 (dep on M1) correct method to work out total sales eg total morning sales + total afternoon sales A1 for no (profit) **and** (£)120 & (£)130 or (£)10 difference OR M1 for correct method to work out the morning sales or the afternoon sales of either daffodils or tulips eg 75×0.8 (= 60) eg (120 – 75) × 0.2 (= 9) eg 50 × 0.9 (= 45) eg (80 – 50) × 0.2 (= 6) M1 for correct method to work out profit/loss on tulips or on daffodils eg 60 + 9 (= 69) eg 45 + 6 (= 51) M1 for correct method to work out profit/loss on tulips **and** on daffodils A1 for no (profit) **and** (£)120 & (£)130 or (£)10 difference NOTE: working can be in pence or £

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5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
6	(a)		reflection	1	B1 for correct reflection
	(b)		2	1	B1 for 2
	(c)		parallel lines	1	B1 for two parallel lines drawn
	(d)		A and F or B and D	1	B1 for A and F or B and D
*7			no and reason	3	M1 adding 6.25 km, 4 km 750 m and 8½ km M1 addition with consistent and correct use of units C1 for no and a correct comparison eg no and 19.5 (km) oe eg no and 0.5 (km) oe
8			B and F	2	B2 for B and F and no extras (B1 for B or F)

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5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
9			3	3	M1 for 90 × 0.2 (= 18) M1(dep) for (90 × 0.2) ÷ 6 or '18' ÷ 6 A1 cao OR M1 for 6 ÷ 0.2 (= 30) M1(dep) for 90 ÷ (6 ÷ 0.2) or 90 ÷ '30' A1 cao OR M1 for 6 ÷ 90 (= 0.0666… seen) M1(dep) for 0.2 ÷ (6 ÷ 90) A1 cao OR M1 for 6 × (1÷ 0.2) or 6 × 5 or (= 30) M1(dep) for '30'+'30'+'30' A1 cao
10		140÷1000 = 0.14 (litres) OR 1.2×1000 = 1200 (ml)	no and reason	2	M1 for 140 ÷ 1000 C1 for no (oe) and 0.14 seen OR M1 for 1.2 × 1000 C1 for no (oe) and 1200 seen OR M1 1*l* = 1000m*l* C1 for no with correct explanation

5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
11	(a)		2436	1	B1 for 2436
	(b)		£267.96	3	M1 for '2436' × 11 or '2436' × 0.11 A1 for digits 26796 or f.t. from (a) A1 for £267.96 or 26 796p
12	(a)		9	1	B1 cao
	(b)		12	1	B1 cao
	(c)		4	1	B1 cao
	(d)		22	2	M1 for 2 × 5 (= 10) and 3 × 4 (= 12) A1 cao
13			68	4	M1 for 112 ÷ 8 (= 14) M1 for combining litres to get a target of '14' eg 5+5+3+1 eg 3+3+3+3+... M1 for correct method to find at least two different costs for tins of paint totalling 14 or 15 OR for correct method to find the cost of 14 litres of paint using at least two different sizes of tin A1 for (£) 68 OR M1 for 5 × 8 (= 40) or 3 × 8 (= 24) M1 for combining the coverage areas to get a target of 112 eg 40+40+24+8 eg 24+24+24+24+ ... M1 for correct method to find at least two different costs for tins of paint totalling 14 or 15 OR for correct method to find the cost of 14 litres of paint using at least two different sizes of tin A1 for (£) 68

5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
14			accurate drawing	3	B3 for complete triangle with all three aspects: 8 cm line (± 2mm) 30° angle (± 2°) 50° angle (± 2°) (B2 for all 3 aspects but incomplete triangle, or complete triangle with 2 aspects only) (B1 for one aspect)
*15			Scheme B gives most	4	M1 for correct method to find 3% of 2500 M1 for correct method to compare Scheme A and Scheme B for the same length of time A1 for correct answers for both schemes C1 f.t. (dep on a comparison for the same length of time) for Scheme B gives the most OR M1 for correct method to convert £5.35 into a % of 2500 M1 for for correct method to compare Scheme A and Scheme B for the same length of time A1 for 2.5(68)(%) C1 f.t. (dep on a comparison for the same length of time) for Scheme B gives the most

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5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
16			correct tessellation	2	B2 for 6 or more additional shapes tessellating (B1 for 4 or 5 shapes tessellating correctly)
17	(i)		30	1	B1 cao
	(ii)		40	1	B1 cao
18	(a)		$4x + 1 = 19$	2	M1 for $x + x + 1 + 2x$ (= 19) A1 for $4x + 1 = 19$ following working
	(b)		4.5	2	M1 for subtracting 1 from both sides or for dividing each term by 4 A1 for 4.5 or 4½
	(c)		14.5	2	M1 for ('4.5' + 1) + 2 × '4.5' or 19 – '4.5' or 3 × '4.5' + 1 A1 for 14.5 or 14½ or ft '4.5'
19			correct shaded region	2	B1 for arc of circle, centre oak tree, radius 4cm (± 2mm) B1 for shaded region where the tree can be planted, bounded by sides of garden and arc of circle centre oak tree

5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
20			144	3	M1 for exterior angle = 360 ÷ 5 (= 72) M1 (dep) for '72' + '72' or 2 × '72' A1 cao **OR** M1 for interior angle = $\frac{3\times180}{5}$ (= 108) M1 (dep) for 360 – 2 × '108' A1 cao **OR** M1 for interior angle = $\frac{3\times180}{5}$ (= 108) or exterior angle = 360 ÷ 5 (= 72) M1 (dep) for $180-\left(\frac{3\times180}{5}-\frac{360}{5}\right)$ or 180 – ('108' – '72') A1 cao

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5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*21		Cost of wages, rent and other expenses last year 92 000+10 800+7000 =109 800 Cost of wages, rent and other expenses this year 1.075× 92 000 + $\frac{7}{9}$ × 10 800 + 7000÷2 = 98 900+8400+3500 = 110 800 Costs are more this year, so she cannot increase the amount she spends on goods	no, with working and reason	4	M1 for an attempt to calculate using 7.5% and 92000 (eg 7.5% of 92000 or increase of 7.5%) eg 92000+6900 or 98900 M1 for an attempt to find a fractional amount of 10800 eg $\frac{7}{9}\times 10800$ or 8400 or $\frac{2}{9}\times 10800$ or 2400 M1 for complete method of increasing 92000 by 7.5%, finding $\frac{7}{9}$ of 10800 and halving 7000 with at least all of these three added together. C1 for statement eg "no" with both 110800 & 109800 seen OR "no" with "1000 more" OR "no" and compares 181800 with 182800 oe

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5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
22	(a)		−3, −2, −1, 0, 1	2	B2 for all 5 values and no others (B1 for 4 correct values and no others or −4, −3, −2, −1, 0, 1 or −3, −2, −1, 0, 1, 2)
	(b)		$-2 \leq x < 4$	2	B2 for $-2 \leq x < 4$ (B1 for $-2 \leq x$ or $x < 4$ or $-2 < x \leq 4$) [Note: accept the use of any letter other than x throughout and ignore any attempt to list integer values]
23			6.87	4	M1 for $\pi \times 4 \times 4$ or $\pi \times 4^2$ or $\pi \times 16$ or $\pi r^2 = 50.26...$ M1 for 'πr^2' ÷ 2 M1 for $8 \times 4 -$ '$\pi r^2 \div 2$' A1 for 6.86 – 6.88
24	(a)		5, −4, −3	2	B2 for 5, −4 and −3 (B1 for 5 or −4 or −3)
	(b)		correct curve	2	B2 for fully correct curve (B1 ft for at least 5 points plotted correctly)

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Mark Scheme (Results)

November 2013

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

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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.

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.

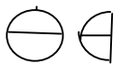
11 Linear equations
Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any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

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 ÷ 360 × 48 oe or 48 ÷ 4 + $\frac{2}{3}$ × (48 ÷ 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

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

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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.

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:			
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 B (2MB01)
Unit 3: 5MB3F_01 (Foundation)

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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.

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)

Guidance on the use of codes within this mark scheme
M1 – method mark for correct method 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: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1			(Ann=) 23 (Ben=) 17	3	M1 for 20 – 5(=15) **and** 20 + 5(=25) or 20 – 8(=12) **and** 20 +8(=28) or 20 – 5 (=15) **and** 20 – 8 (=12) or 20 + 8 (=28) **and** 20 + 5 (=25) or 20 – 5 + 8 or 20 − 8 + 5 or 8 − 5 (=3) M1 for 20 − 5 + 8 **and** 20 − 8 + 5 or 20 − "3" **and** 20 + "3" or one answer correct or both answers reversed. A1 for 23 and 17 (SC B1 for (Ann =)13, (Ben =) 7
2	(a)		A and E	1	B1 cao
	(b)		D	1	B1 cao
3	(a)		pentagon	1	B1 for pentagon
	(b)		hexagon drawn	1	B1 for a sketch of an hexagon
	(c)		5cm by 3cm rectangle drawn	2	B2 for a rectangle with two perpendicular sides with correct lengths (B1 for a rectangle with one side of correct length or a quadrilateral with a pair of adjacent sides of correct lengths)

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Paper: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
4			Sarah	2	M1 for 8.8 + 9.0 + 9.3 and 9.0 + 9.0 + 9.0 A1 for Sarah **and** 27.1 **and** 27 OR M1 for 9.0 − 8.8 (=0.2) and 9.3 − 9.0 (=0.3) A1 for Sarah **and** 0.1
5			5	2	M1 for 58 ÷ 12 (= 4.8...) or 58 – 12 – 12 – 12 …or adding at least 12 + 12 + 12 + ... or counting up multiples of 12 with at least 12, 24, 36… A1 cao
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
7			4	3	M1 for 3 × 35 (=105) or 33 seen M1 for (138 – "105") ÷ 10 (= 3.3) or "33" – 10 – 10 (– 10) oe A1 cao
8	(a)		reflection	2	B2 cao (B1 for reflection with correct orientation)
	(b)		2	1	B1 for 2
9			11.45 (am)	3	M1 for 1.5 × 40 + 15 (=75) M1 (dep) for changing '75' to hours and minutes or subtraction of 60 minutes A1 for 11.45(am)

Paper: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
10	(a)		graph drawn	2	B2 for correct straight line from 0 to 8 gallons (B1 for at least 4 points plotted accurately or line through at least 4 of the points from the table)
	(b)		22 – 24	1	B1 for 22 – 24 or ft from graph in (a)
	(c)		7.0– 7.4	1	B1 for 7.0 – 7.4 or ft from graph in (a)
11	(a)		2	1	B1 for 2 (or +2)
	(b)		−9	1	B1 cao
	(c)		−3	1	B1 cao
12			14	2	M1 for 4 + 2 × 5 A1 cao
13	(a)		31.25	2	M1 for complete method eg 125 ÷ 4 or 25 + 12.5 ÷ 2 A1 cao
	*(b)		France with comparison	3	M1 for method to convert €100 to pounds eg 20 × 4 A1 for (£)80 C1 (dep M1) for correct comparison with correct units OR M1 for method to convert £90 to Euros eg (£90=)125 − 12.5 (=112.5) A1 for (€)112.5(0) C1 (dep M1) for correct comparison with correct units

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Paper: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
14	(a)		4	1	B1 cao
	(b)		6	1	B1 cao
15			tessellation	2	B2 for at least 6 correct shapes, including initial shape, correctly tessellating. (B1 for at least 4 correct shapes, which may include initial shape, correctly tessellating, ignore the rest of the diagram)
16	(a)		118 - 122	1	B1 for 118 – 122
	(b)		17.5	2	M1 for 2.5 × "7" where "7" is 6.8 – 7.2 A1 for 17 - 18
	(c)		Position marked	2	B1 for school marked due North of church B1 for distance of 6cm
17			No with reason	3	B1 for converting units, eg 5000 (cm) or 6.75 (m) M1 for 8 × "675" (=5400) or 8 × 6.75 (=54) A1 for No with comparison of correct figures for thread per dress needed with consistent units eg 54(m) > 50(m) OR B1 for converting units, eg 5000 (cm) or 6.75 (m) M1 for 5000÷8 (=625) or 50 ÷ 8 (=6.25) A1 for No with comparison of correct figures for total thread needed with consistent units eg 625(cm) < 675(cm) OR B1 for converting units eg 5000 (cm) or 6.75 (m) M1 for 5000 ÷ 675 (= 7 or 7.4…) or 50 ÷ 6.75 (= 7 or 7.4…) A1 for No with reason and correct figure for number of dresses eg 7 or 7.4

Paper: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*18			Investment A with working	5	M1 for 8×12(=96) **or** 8×3×12 (=288) M1 for 0.035×2400 (=84) **or** 0.035×2400×3 (=252) M1 for use of the same time period for both calculations eg 8×12(=96) **and** 0.035×2400 (=84) or 8×3×12 (=288) **and** 0.035×2400×3 (=252) A1 for correct answers for same time period eg 96 **and** 84 or 288 **and** 252 C1 (dep on M2) for correct decision based on their figures, supported by working OR M1 for 8×12(=96) **or** 8×3×12 (=288) M1 for $\frac{"96"}{2400} \times 100$ or for $\frac{"288"}{2400} \times 100$ (=12) M1 for use of the same time period for comparison eg $\frac{"96"}{2400} \times 100$ or "12"÷3 compared to 3.5% or $\frac{"288"}{2400} \times 100$ (=12) compared to 3.5 × 3 (=10.5) A1 for 4(%) or 12(%) **and** 10.5(%) C1 (dep on M2) for correct decision based on their figures, supported by working
19			3cm×6cm rectangle drawn	2	B2 cao (B1 for a rectangle with one correct side)
20			226.80	3	M1 for method to find 5% of 54 (= 2.7) or 5% of "54×4" (=10.8) or 105% of 54 (= 56.7) M1 for a complete method to find the total amount A1 for 226.8(0)

Paper: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*21		**Examples** **£ per bag** 2.15÷50 = 0.043 (4.3) 3.29÷80 = 0.0411.. (4.11..) 5.17÷125 = 0.0413..(4.13..) **Bags per £ (or p)** 50÷2.15 = 23.2(5...) 80÷3.29 = 24. 3(1...) 125÷5.17 = 24.1(7...) **Price per 400 bags** S: 2.15×8 = 17.2 M: 3.29×5 = 16.45 **Price per 1000 bags** M: 3.29×12.5 = 41.125 L: 5.17×8 = 41.36	Medium	4	M1 for division of price by quantity for at least 2 boxes **or** division of quantity by price for at least 2 boxes **or** a complete method to find price of same quantity for at least 2 boxes **or** to find quantity of same price applied to at least 2 boxes M1 for a complete method to give values that can be used for comparison of all 3 boxes. A1 for correct values that can be used for comparison for all 3 boxes C1 ft (dep on M2) for comparison of their values with a correct conclusion.
22	(a)		$5x - 3 = 52$	3	M1 for $2x$ or $2x - 3$ seen M1 for x and $2x$ and $2x - 3$ A1 for $5x - 3 = 52$ from correct working
	(b)		11	2	M1 for intention to either add 3 to both sides or divide all terms by 5 as a first step A1 cao
23			enlargement scale factor 3 centre O	3	B1 for enlargement B1 for scale factor 3 B1 for (centre) O oe NB: B0 for any combination of transformations

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Paper: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
24			77 – 77.2	4	M1 for $\pi \times 40^2 \times 90$ (= 452389. ..) M1 for "452389" – 65000 (= 387389. …) M1 (dep on at least M1) for "387389. .." ÷ ($\pi \times 40^2$) A1 for answer in the range 77 to 77.2 OR M1 for $\pi \times 40^2$ (= 5026. ..) M1 for 65000 ÷ "5026. .." (= 12.93....) M1 (dep on at least M1) for 90 – "12.93" A1 for answer in the range 77 to 77.2
25			$h = \frac{x-8}{5}$	2	M1 for intention to either subtract 8 from both sides or divide each term by 5 as a first stage of working A1 for $h = \frac{x-8}{5}$ oe

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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: 5MB3F_01			
Question		**Modification**	**Notes**
Q02		Shapes G, H and I removed	
Q03	(b)	six polygons with 3, 4, 5, 6, 7, 8 sides labelled A to F "Which polygon is a hexagon?"	
	(c)	5cm and 3cm changed to 10cm and 6cm. Base line given	
Q06		Bars: May up to 15, Jun and August up to 5, July up to 7.5 2cm squares	
Q08		2cm grids	
Q10	(c)	2cm grid 33 litres changed to 30	
Q15		5 shapes not 6 1 shape provided for all candidates last 2 columns removed from grid	

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Mark Scheme (Results)

Summer 2017

Pearson Edexcel GCSE (9 – 1)
In Mathematics (1MA1)
Foundation (Calculator) Paper 2F



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General marking guidance

These notes offer general guidance, but the specific notes for examiners appertaining to individual questions take precedence.

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

Where some judgement is required, mark schemes will provide the principles by which marks will be awarded; exemplification/indicative content will not be exhaustive. When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the response should be sent to review.

2 All the marks on the mark scheme are designed to be awarded; mark schemes should be applied positively. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme. If there is a wrong answer (or no 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.

Questions where working is not required: In general, the correct answer should be given full marks.
Questions that specifically require working: In general, candidates who do not show working on this type of question will get no marks – full details will be given in the mark scheme for each individual question.

3 **Crossed out work**
This should be marked **unless** the candidate has replaced it with an alternative response.

4 **Choice of method**
If there is a choice of methods shown, mark the method that leads to the answer given on the answer line.

If no answer appears on the answer line, mark both methods **then award the lower number of marks.**

5 **Incorrect method**
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 for your Team Leader to check.

6 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working as you can check the answer, 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.

7 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 or its context. (e.g.. an incorrectly cancelled fraction when the unsimplified fraction would gain full marks).

It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect (e.g.. incorrect algebraic simplification).

8 Probability

Probability answers must be given as a fraction, percentage or decimal. 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 fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

9 Linear equations

Unless indicated otherwise in the mark scheme, full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously identified 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).

10 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 all numbers within the range.

Guidance on the use of abbreviations within this mark scheme	
M	method mark awarded for a correct method or partial method
P	process mark awarded for a correct process as part of a problem solving question
A	accuracy mark (awarded after a correct method or process; if no method or process is seen then full marks for the question are implied but see individual mark schemes for more details)
C	communication mark
B	unconditional accuracy mark (no method needed)
oe	or equivalent
cao	correct answer only
ft	follow through (when appropriate as per mark scheme)
sc	special case
dep	dependent (on a previous mark)
indep	independent
awrt	answer which rounds to
isw	ignore subsequent working

Paper 1MA1: 2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
1 (a)		$3p$	B1	cao
(b)		$2m^3$	B1	cao
(c)		$10 - 4c + 6d$	M1	for $-4c$ or $6d$ (accept $+-4c$)
			A1	for $10 - 4c + 6d$
2		60	B1	cao
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)
4		$\frac{11}{30}, \frac{2}{5}, \frac{7}{15}, \frac{1}{2}$	M1	converts fractions to a common form, e.g. fractions with a denominator of 30, decimals or percentages, at least two conversions correct or any 3 fractions in correct order
			A1	correct order

Paper 1MA1: 2F				
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
6		268.20	P1	for a process to work out the value of the £1 coins, eg. 495 ÷ 3 (= 165) or 495 × 0.33...or of the 50p coins, eg. 124 ÷ 2 (= 62)
			P1	for process to find the number of 20p coins, eg. (495 – 124 – (“165”) (= 206)
			P1	for complete process to find total value using consistent units., eg. (“165”) + (124 ÷ 2) + (“206” × 0.2) or 165 + 62 + 41.2
			A1	cao (accept 268.2)
7		0.985	B1	oe
8 (a)		25	B1	for 25 (accept 5^2)
(b)		24	B1	cao
(c)		23, 29	B1	for 23 and 29 and no extras
9		54	M1	for method to form equation, eg $90 + 2x + 3x = 360$ or for $360 – 90$ (= 270)
			M1	for $5x = 360 – 90$ or for $2x + 3x = 360 – 90$ or for $2x = 108$ or for $3x = 162$ or for $270 \div 5$
			A1	cao

Paper 1MA1: 2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
10		Letters2send (supported)	P1	for the start of a process to find comparable costs at either shop, e.g. 150 ÷ 25 (= 6) or 150 ÷ 30 (= 5), 150 ÷ 10 (= 15), 2.10 ÷ 15 = (=0.14)
			P1	for process to find cost from Letters2send, e.g. (150 ÷ 25) × 3.49 (= 20.94)
			P1	for process to find cost at Stationery World, e.g. (150 ÷ 30) × 2 × 2.10 (= 21)
			C1	for correct conclusion with correct values from each shop (20.94 and 21)
				OR
			P1	for the start of a process to find comparable costs, eg 3.49 ÷ 25 (= 0.1396), 2.10 ÷ 10 (= 0.21), 25 ÷ 3.49 = (7.1...), 2.10 ÷ 15 = (= 0.14)
			P1	for process to take into account the offer at Stationery World, eg buy 30 envelopes pay for 20,
			P1	for complete process to find values that can be used for comparison, eg 30 × 0.13(96) and 2 × 2.10 (= 4.2(0))
			C1	for correct conclusion with correct values from each shop (4.1(88) and 4.2(0))

Paper 1MA1: 2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
11 (a)		29	B1	answer in the range 29 to 30
(b)		186 to 195	M1	for changing 6ft 3 inches to inches e.g. $6 \times 12 + 3$ (= 75) or changing 1ft to 30 cm
			M1	for a method to convert to cm, e.g. 25 →63 then × 3, $6 \times 30 + \frac{1}{4} \times 30$
			A1	for answer in the range 186 to 195 or ft from correct use of graph
12		0.0733(03...)	M1 A1	for correct numerator (3.4496.....) or correct denominator (47.0596) or 0.073 for 0.0733(03.....)
13 (a)		Rotation	B2	for a fully correct rotation at (–4,–1), (–3,–1), (–4,–4), (–1,–2)
			[B1	for the quadrilateral in correct orientation and size or rotated 90° anticlockwise about the origin]
(b)		Reflection in the *y*-axis	B1	for reflection
			B1	for *y*-axis (or *x* =0)
				[A combination of transformations scores 0 marks]

Paper 1MA1: 2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
14 (a)		$5(1 - 2m)$	B1	cao
(b)		$2ab(a + 3b)$	M1	for $2a(ab + 3b^2)$ or $2b(a^2 + 3ab)$ or $ab(2a + 6b)$ or $2ab$(2 term expression with terms in a or b or ab, can include constants), eg $2ab(1a + 3ab)$, $2ab(1 + 3b)$
			A1	for $2ab(a + 3b)$
15 (a)		0.47	B1	
(b)		2.28×10^9	M1	for correct value but not in standard form, eg $22.8 \times 10^{3+5}$, 228×10^7, 2 280 000 000 or for 2.28×10^n , $n \neq 9$
			A1	cao
16		T shown on the map	C1	for showing a perpendicular bisector or point T equidistant from points B and C.
			C1	for a circle or arc of circle of radius 2.5 cm or point T 2.5 cm from point A
			C1	for T shown in correct position

Paper 1MA1: 2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
17		98	P1	for process to find P(1), e.g. 1 – 0.17 – 0.18 – 0.09 – 0.15 – 0.1 (= 0.31) or for a process to find P(1 or 3), e.g. 1 – 0.17 – 0.09 – 0.15 – 0.1 (= 0.49)
			P1	for process to find the number of 3s, e.g. 0.18 × 200 (=36) or process to find the number of 1s, e.g. P(1) × 200 (= 62), or process to find the number of (1 or 3)s, eg [P(1) + 0.18] × 200 or process to find any expected frequency, using any probability × 200, eg 0.17 × 200
			A1	cao
				OR
		98	P1	for process to find P(2 or 4 or 5 or 6), eg 0.17 + 0.09 + 0.15 + 0.1 (= 0.51)
			P1	for process to find the number of (2 or 4 or 5 or 6)'s, eg "0.51" × 200 (= 102)
			A1	cao

Paper 1MA1: 2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
18		Yes (supported)	P1	for process to work out the total number of children, e.g. 117 × 4 (= 468)
			P1	(dep P1) for process to work out total number of adults or the total number of people, e.g. "468" × 5 ÷ 2 (= 1170) or "468" × 7 ÷ 2 (= 1638)
			A1	for 1170 or 1638
			P1	for process to work out the percentage of theatre full, e.g. $\frac{"468"+"1170"}{2600} \times 100$ (= 63) or for a process to work out 60% of 2600 (= 1560)
			C1	for a correct conclusion supported by correct figures e.g. 63% or 1560 **and** 1638
				OR
			P1	for a process to work out 60% of 2600, eg. $\frac{60}{100} \times 2600$ (= 1560)
			P1	(dep P1) for process to work out total number of children, e.g. "1560" × 2 ÷ 7 (= 445(.7...)
			A1	for 445(.7...)
			P1	for process to work out number of children in the circle, eg. "445(.7...)" ÷ 4 (= 111 to 112)
			C1	for a correct conclusion supported by correct figures e.g. 111 to 112
				[Where appropriate, accept rounded or truncated values]

Paper 1MA1: 2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
18 cont.				OR
			P1	for a process to find the maximum number of children, eg. 2600 × 2 ÷ 7 (= 742(.8…))
			P1	for process to work out the total number of children, e.g. 117 × 4 (= 468)
			A1	for 468 and 742(.8...)
			P1	for $\frac{"468"}{"742(.8..)"} \times 100$ (= 63) or process to work out 60% of "742.8.." (= 445(7..))
			C1	for a correct conclusion supported by correct figures e.g. 63% or 468 and 445(.7...)
				[Where appropriate, accept rounded or truncated values]
19		Side elevation	C2	for the side elevation (4 cm by 2 cm rectangle with a solid line drawn 1 cm from the 2 cm edge, and correct orientation)
			[C1	for the side elevation as a rectangle]
		Front elevation	C2	for the front elevation as a trapezium in correct orientation with base 4 cm, parallel sides 1 cm and 4 cm
			[C1	for the front elevation as a trapezium with two right angles]
				[Ignore incorrect or no labelling]

Paper 1MA1: 2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
20 (a)		57.1	P1	for a process to find time from Liverpool to Manchester, eg. 56 ÷ 70 (= 0.8 (hrs) or 48 (mins))
			P1	for a process to find the total distance, eg 56 + 61 (= 117) or the total time, eg"48" + 75 (= 123) or "0.8" + $\frac{75}{60}$ (= 2.05), with consistent units of time
			P1	(dep P2) for a correct process to find average speed with consistent units of time, eg."117" ÷ "2.05" or ."117" ÷ "123"
			A1	for answer in the range 57 to 57.1
(b)		explanation	C1	for explaining that the time taken for the two parts of the journey must be the same or the distance from Leeds to York is $\frac{3}{4}$ the distance from Barnsley to York oe
21 (a)		3.9	M1	for a ratio of $\frac{8.1}{5.4}$ (= 1.5) oe or $\frac{5.4}{8.1}$ (= 0.66..) oe or $\frac{2.6}{5.4}$ (= 0.48..) oe or $\frac{5.4}{2.6}$ (= 2.07..) oe
			A1	cao
(b)		2.05	M1	for $\frac{5.4}{8.1} \times 6.15$ (= 4.1) or $\frac{2.7}{8.1} \times 6.15$ oe or ft "scale factor" from (a)
			A1	cao

Paper 1MA1: 2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
22		Secure Bank (supported)	P1 P1 C1	for a process to work out the interest after one year e.g. 0.02×25000 (= 500) or 0.043×25000 (= 1075) or for 1.02 or 25500 or 1.043 or 26075 for process to find value of the investment after 3 years or the multiplicative factor for 3 years at one of the banks, e.g. $25000 \times 1.02 \times 1.02 \times 1.02$ oe (= 26530...) or 1.02^3 (= 1.0612...) or $25000 \times 1.043 \times 1.009 \times 1.009$ oe (= 26546...) or $1.043 \times 1.009 \times 1.009$ (= 1.0618.....) [accept total interest of 1530...or 1546...if final values of investment are not found] for Secure Bank from correct figures eg 26530.. and 26546..or 1530.. and 1546.. or 1.0612.. and 1.0618
23		$4.755 \leq n < 4.765$	B2 [B1	for $4.755 \leq n < 4.765$ for 4.755 or 4.765 or 4.764$\dot{9}$]
24		$x = -8$, $x = 3$	M1 M1 A1	for factorisation or for substitution into quadratic formula $(x \pm a)(x \pm b)$ where product of a and b = 24, eg $(x \pm 4)(x \pm 6)$ or difference of a and b = 5, eg $(x \pm 2)(x \pm 7)$ $\frac{-5 \pm \sqrt{5^2 - 4 \times 1 \times -24}}{2}$ oe (condone one sign error) for $(x + 8)(x - 3)$ or for $\frac{-5 \pm \sqrt{121}}{2}$ oe cao

Paper 1MA1: 2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
25 (a)		$5n - 2$	B2	for $5n - 2$ oe
			[B1	for $5n + k$, k may be 0]
(b)		No (supported)	C1	for No with evidence, e.g. $3 \times 4^2 = 48$, $\sqrt{48}$ is not an integer, he has multiplied by 3 first but should have squared first

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: 1MA1_2F			
Question		**Modification**	**Mark scheme notes**
1	(c)	MLP and braille: *c* and *d* changed to *s* and *t*.	Standard mark scheme but change *c* & *d* to *s* & *t*
3		Grid enlarged. Key moved above the diagram. Right axis has been labelled. Boys shading has been changed to dotty. The vertical axis label has been moved above the vertical axis	Standard mark scheme
5	(b)	Pictogram enlarged. Key moved above the diagram.	Standard mark scheme
8		Wording 'nine' added	Standard mark scheme
9		Diagram enlarged. Angle sizes moved outside the angle arcs; the arcs have been made smaller.	Standard mark scheme
11		Grid enlarged. Right axis labelled. Axes labels have been moved to the left of the horizontal axis and above the vertical axis. In (a) Number '74' changed to '90'.	(a) becomes 35 to 37. In (b) suggest 180 to 200
13	(a)	Question reversed. Rotation drawn on the diagram and labelled as 'shape B'. Grid enlarged and *y* axis reduced so it finishes at 2. Shapes labelled 'shape A' and 'shape B'. Wording changed 'It shows shape A and shape B given on a grid. Describe fully the single transformation that maps shape A onto shape B.'	Award B1 for "rotation" Award B1 for "90° clockwise about centre O [or (0,0)] NB: award B0 for any indication of a mention of other transformations
13	(b)	Grid enlarged and y axis reduced so it starts at -2. Wording 'B' and 'C' deleted and shapes labelled as 'shape P' and 'shape Q'. Triangles P and Q moved above the *x* axis. Wording added 'It shows shape P and shape Q given on a grid.'	Standard mark scheme

PAPER: 1MA1_2F			
Question		**Modification**	**Mark scheme notes**
14	(b)	MLP only: *a* changed to *x* and *b* changed to *y*.	Standard mark scheme but change *a* & *b* to *x* & *y*
16		Number '250 metres' changed to '500 metres'. Points *B* and *C* moved to the right to allow for use of specialist equipment. Points *B* and *C* joined with a line. Scale moved above the diagram.	Standard mark scheme, but given the alternations to the given diagram, the relative positions of any constructions and the position(s) of *T* will change.
17		Table turned to vertical format.	Standard mark scheme
19		Alternative question. Model has been provided for all candidates. Diagram enlarged and also provided for MLP. The measurements on the prism have been doubled. Wording added next to the diagram of the trapezium 'Diagram NOT accurately drawn'. Four shapes have been provided below the trapezium labelled A to D. Wording added above the four shapes 'scale: 2 cm to 1 metre'. Question wording has changed and has been split into two parts: 'Look at the model or at the diagrams for Question 19 in the Diagram Book. They show a prism with a cross section in the shape of a trapezium. All measurements are in metres. Below the prism there are four shapes A, B, C and D. (i) Which shape shows the front elevation of the prism? (ii) Which shape shows the side elevation of the prism?'	Mark scheme amended as follows: (i) B2 for C (ii) B2 for A (B1 for B or D)
21		Diagram enlarged. Measurements '2.6 cm' and '5.4 cm' added to the diagram.	Standard mark scheme

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Question 25

Most students showed some understanding of working with percentages, but there was considerable confusion about the necessary processes attached to compound interest. Firstly, there were errors in copying down the numbers, particularly missed zeros. Then the issue as to what to do with 1.5%. Some used this as 15%, others 0.15%. Some remembered something to do with multipliers and used 1.05, 1.005 or 1.15. But the main issue was simply that they had no notion of compound interest. The most common approach was to find a percentage of 200000 and multiply this by 4; 12000 was a very common answer. Those who tried to remember a formula approach usually inserted an incorrect multiplier, 200000×1.5^4 being common. Those students who made the most in-roads into the process were those who worked it out year by year, but premature rounding was in evidence again here, so the accuracy mark was rarely gained. And finally, those who could get to the end frequently gave the answer as 212272.71 (the amount rather than the interest). So overall too many errors in what is a standard process; the most successful approach being one year at a time and using accurate figures from the calculator.

Question 26

Most students scored at least one mark in this question for working out the value of 4% of £679. Some used 12% and only considered simple interest, students are reminded to read the questions carefully as the second mark could not be achieved unless compound interest was used. A very few students used the approach of 679×0.96^3, others listed each the value for each year. Students should be encouraged to write down all their processes when using a calculator to make their intention clear as some inaccuracies or rounding can occur during working. Unfortunately, some students typed 679 - 4% into their calculator, to give 678.96. It was also common to see students find 4% and add on or use the formula with a decimal multiplier for increasing.

Question 23

This question required students to calculate with compound interest and a mark was often awarded for calculating the interest for a single year but many did not add this amount on before working with the interest rate for the second year and instead used the starting value of £7000 for both rates before adding the values together. A small minority of students used the second interest rate of 1.5% for 2 years instead of one year.

It was also disappointing to see some students using written calculations to find their answer and practice using a calculator to answer this type of question would be beneficial to students.

Question 27

Most students scored at least one mark in this question for working out the value of either 4% of £150 000 or 1.5% of 160 000. Many continued working to gain a second mark for either using compound interest for one value or, more commonly, working with percentage increase for one year for both values. It was common for 8% and 3% to be used due to only considering simple interest. Students are reminded to read the questions carefully as the third mark could not be achieved unless compound interest was used. A very few students used the approach of using decimal multipliers, a few students used the formula from the exam aid, and those that did tended to get it correct, others listed values for each year separately. Students should be encouraged to write down all their processes when using a calculator to make their intention clear. A build-up method was commonly used and often led to an incorrect answer, and without any working out, marks could not be awarded. Unfortunately, some students used 1.4 for 4% or 1.15 for 1.5% or attempted to use the % button on their calculator which often led to only adding 0.04 or 0.015.

One approach to this question was to use compound interest for only Tamsin and add one year of interest for Rachel to find valid comparable figures. This approach was seen rarely, with many that used compound interest rather than simple interest, often calculating 2 years for both Tamsin and Rachel. When compound interest was used, correct figures and a correct decision often followed. A very small number of students did not make a final decision though.

Question 24

The vast majority of students achieved 1 mark in this standard compound interest question, for finding the amount in the savings account after 1 year including interest. Some students successfully found the interest for one year or embedded this by finding simple interest for two years, showing that they could work with percentages but not all could distinguish the difference between simple and compound interest. Some students, however, found the interest for one year but did not gain the mark as they failed to add it to the starting investment amount, and a small number also failed to gain any marks as they successfully found the simple interest but then incorrectly subtracted it from 4500. A very small number of students simply multiplied or divided 4500 by 3.4 or 6.8, showing no understanding of how to calculate with percentages.

Question 15

Whilst there were very few blank responses seen, many failed to score both marks. It was common to see incorrect use of decimal multipliers, frequently forgetting to divide by 100 and 8750 being a commonly seen incorrect answer. It was also noted that a larger than expected number of students used compound interest instead of simple interest and this may have been more commonly attempted due to a lack of understanding of the differences and using the formulae sheet provided.
Where responses included 6×2.5 in an attempt to find the total percentage interest, the method mark was rarely awarded, as there was often no mention of percentage or an expression in the form 6×0.025 and there was often confusion over what the 2.5 really was, so was not uncommon to see an answer of $2.5 \times 6 = £15$. Multiple examples of 3500×6, 3500×2.5 or attempts to subtract interest amounts once found were also seen.
Given students had access to a calculator, a significant number chose to use a build-up method with no clear process shown. This often led to no marks being scored due to an arithmetic error. Centres should emphasise the need to show a valid process even when using a build-up approach and that 'of' is not an acceptable process.

To improve on this skill, students need to be secure in their understanding of what a percentage is as a fraction or part of 100. Centres should also ensure students can confidently use their calculator to find basic percentages. Students would benefit with being more familiar with the difference between simple and compound interest applied in real life contexts to make it more memorable to candidates.

Question 25

A majority of this cohort gained 0 or 1 mark on this ‘compound interest’ question. Many of those who gained 1 mark worked with ‘simple interest’ and therefore gained a mark for finding 6% of 25 000 or for one of the Special Cases in the mark scheme. Some students did work with ‘compound interest’ correctly and it was pleasing to see a good number of those students, once they had reached 29 775.4, understand that the answer must be an integer and give a correct answer, usually 29 775. Some students worked with both ‘simple interest’ and ‘compound interest’ figures, and chose the simple interest answer. The majority of correct answers came from using the traditional compound interest formula, marks only being lost for failing to round to a whole number. Some students arrived at the correct answer by using repeated percentage change (rather than a multiplier with power of 3), but more often than not this process led to mistakes, particularly in the last stage. A few students used the wrong multiplier e.g. 1.006 or 1.6.

Question 26

A small number of learners were able to gain 3 marks for a correct answer for the value of interest after 3 years. Of those that didn't, it was common to see 1 or 2 marks awarded. For those that gained 2 marks, it was usually for reaching 4747.4... but failed to subtract 4500 to work out the interest. Those that gained 1 mark usually found the value of the investment or interest after 1 year or worked with simple interest and gained SCB1 for 243 or 4743. A good number of the cohort gained 0 marks with a variety of incorrect methods seen.