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GCSE MATHS

Number

Edexcel 1MA1 | Subtopic collection Topic 07

Standard form

Foundation tier

Answers and examiner comments

15	2017-2025	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.

Original question 15

The full source mark scheme begins on page 25. Use the original paper code, tier and question number shown above.

21		1.8×10^{-3}	M2 (M1 A1	for $\frac{6\times10^{-2}\times3\times10^{-4}}{1\times10^{-2}}$ or 18×10^{-4} or 0.0018 as the answer for 6×0.0003 **or** 0.06×0.03 **or** 1.8×10^{n} ($n \neq -3$) **or** $0.000018 \div 0.01$ **or** rewriting one number in standard form) cao

Paper 1MA1: 1F

18	2.3×10^6	M1 A1	for 2.3×10^n where $n \neq 6$ **or** 23×10^5 or 2300000 **or** 2645000000 and 1150 seen cao	2300000 could be written as 2.3 million

Paper: 1MA1/3F

27	(a)	7.547×10^{-5}	B1	cao	
	(b)	34200	B1	cao	
	(c)	3.082×10^{15}	M1	for $\frac{23000\times6700}{0.00000005}$ **OR** for one calculation eg 1.541×10^{8} **or** 154 100 000 **or** 4.6×10^{11} **or** 1.34×10^{11}	
			A1	for 3.082×10^{15} oe	Answer could be given as an ordinary number.

Modifications to the mark scheme for Modified Large Print (MLP) papers. Paper 2F.

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**
10		Wording changed from 'Here is' to 'It shows'.	Standard mark scheme
13	(a)	Wording changed from 'A square has' to 'It shows a square with'. Diagrams enlarged.	Standard mark scheme
13	(b)	Top of the parallelogram labelled 30 cm. Braille only – triangle labelled ABC and parallelogram DEFG, added information about the shapes	Standard mark scheme
16		Diagram enlarged. Shading changed to dotty shading. Wording deleted from inside the shapes. Shapes labelled 'shape A' and 'shape B', above and below respectively. Wording added 'It shows shape A and shape B on a grid.' K and V only – shape provided.	Standard mark scheme
17		Table turned to vertical format.	Standard mark scheme
19	(b)	Braille and MLP – *b* changed to *y*.	Standard mark scheme but *b* changed to *y*.
20		Diagram enlarged. Wording added 'It shows a Venn diagram.' Circles labelled 'set A', 'set B' and 'set C'. Braille only – sticky labels provided.	Standard mark scheme
21		Diagram enlarged. Crosses changed to solid dots. Axes labels moved to the right of the horizontal axis and above the vertical axis. Wording changed from 'Here is his answer.' to 'His answer is shown in the Diagram Book.'	Standard mark scheme

PAPER: 1MA1_2F			
Question		**Modification**	**Mark scheme notes**
22		Diagram enlarged. Arrows moved further to the right and made bigger. Angles moved outside of the angle arcs and angle arcs made smaller. Wording added 'Angle CBG = 35°, Angle BED = 110°, Angle GEF = 25°, Angle BGE is marked *x*.' Wording changed from 'Work out the size of angle *x*.' to 'Work out the size of the angle marked *x*.	Standard mark scheme
24		Diagram enlarged and a model provided for all candidates. Wording added 'The diagrams show a floor in the shape of a trapezium and a tin of paint. The model represents the tin of paint.' Braille only – parallelogram labelled ABCD, added information about the shape.	Standard mark scheme
26	(a)	MLP only – *x* changed to *y*.	Standard mark scheme with *x* changed to *y*
26	(b)	MLP only – *x* changed to *y*.	Standard mark scheme with *x* changed to *y*

Paper: 1MA1/2F

Question	Answer	Mark	Mark scheme	Additional guidance
27 (a)	5.62×10^{-3}	B1	cao	
(b)	1452	B1	cao	

27	4.56×10^{-2}	M1 A1	for $0.000000342 \div 0.0000075$ **OR** for 0.0456 oe eg 0.456×10^{-1} **or** 45.6×10^{-3} **or** $\frac{57}{1250}$ **OR** for an answer of 4.56×10^{n} cao	

Paper: 1MA1/3F

Question		Answer	Mark	Mark scheme	Additional guidance
28	(a)	3.246×10^7	B1	cao	
	(b)	0.00496	B1	cao	
	(c)	No with explanation	C1	No and explanation that B is bigger as the power of 10 is bigger. **Acceptable examples** She is incorrect as 10^8 is smaller than 10^9 No, because B has more digits than A No, A is millions but B is billions No, if you subtract A from B the answer is positive (but if you subtract B from A the answer is negative) A= 621200000, B=4730000000, B is bigger No because she did not take into account standard form No as when you find the ordinary number B is greater than A **Not acceptable examples** Yes… A = 5 zeros after the number where as B = 7 zeros after the number No as 4.73×10^9 is one more than 6.212×10^8 6.212 is to the power of 8 and 4.73 is to the power of 9 so there is an extra digit Asma is wrong because she has more numbers behind the decimal point which means that it will be bigger than A No B has more zeros	Decision eg "No" may be seen by the question. "She is incorrect" is equivalent to "no"

Paper: 1MA1/3F

23	(a)	450 000	B1	cao	
	(b)	7×10^{-3}	B1	cao	
	(c)	4.73×10^{3}	M1	for 4730 oe **or** for 4.73×10^{n} where $n \neq 3$	
			A1	cao	

Paper: 1MA1/3F

26	(a)	0.00163	B1	cao	
	(b)	4.38×10^{5}	B1	cao	
	(c)	2.4×10^{-1}	M1	for $4\times6\times10^{3-5}$ **or** 0.24 oe eg 24×10^{-2} **or** 2.4×10^{n} where $n\neq-1$	
			A1	cao	

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
29 (a)	0.000675	B1	cao	
(b)	6.592×10^5	M1	for 10.5472×10^3 oe or 1.6×10^8 oe or 2.575×10^{-1} oe or for 6.592×10^n where $n \neq 5$ or for 6.59×10^5 or for 6.6×10^5 or for 659200 oe	If the answer (for 2 marks) is seen in working and then rounded or truncated, award full marks.
		A1	cao	

20	(a)	4.68×10^5	B1	cao	
	(b)	0.000 503 7	B1	cao	

Question	Answer	Mark	Mark scheme	Additional guidance
23 (a)(i)	53 000	B1	cao	
(ii)	0.000 074	B1	cao	
(b)	3.42×10^{7}	M1	for 9 700 000 + 24 500 000 (= 34 200 000) **or** 3.42×10^{n} $(n \neq 7)$ oe **or** 3.4×10^{7} **or** correct answer in incorrect form eg 34.2×10^{6} **or** both in a form ready for addition, eg $9.7 \times 10^{6} + 24.5 \times 10^{6}$	
		A1	cao	

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
27	3.125×10^7	M1	for $(k =)\ (1.25\times10^{-12})\div(4\times10^{-20})$ **or** for the digits 3125	Condone missing brackets on division 3.1×10^7 or 3.12×10^7 or 3.13×10^7 will score M1A0
		A1	cao	

Question	Answer	Mark	Mark scheme	Additional guidance
18 (a)	340 200	B1	cao	
(b)	8.026×10^{-1}	B1	cao	

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
23	1.037×10^4	M1	for 570 or 9800 or 0.57×10^3 or 98×10^2	
		A1	for 10370 oe eg 10.37×10^3 or 103.7×10^2	
		A1	for 1.037×10^4	



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 ÷ 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.

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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

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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 27

Understanding of standard form was good. Many students earned at least one mark, usually for a correct answer to part (b).

Question 27

Many students were able to enter the calculation into a calculator to obtain 0.0456 and they were awarded the method mark. The question required the answer to be given in standard form but it was common to see 0.0456 given as the final answer. Those who did attempt to write 0.0456 in standard form were often unsuccessful. Some students did not show 0.0456 but scored one mark for an answer of the form 4.56×10^n with an incorrect value of n. Some students made hard work of this question and attempted to convert to ordinary numbers before doing the calculation. They usually got into difficulties.

Question 28

Part (a) and (b), which involved conversion to and from standard form, were generally answered well and worth a single mark each.

Part (c) was another interpretation question, and like the questions earlier in the paper, it was answered quite well. Students were expected to realise that the major contributor was the power of 10 and hence B is bigger, and many were able to articulate this well enough. However, there were a number of misconceptions that became evident through responses. Some students made the same mistake as the person in the question and felt the number of decimal places was key. A good number also felt it was to do with the number of zeros, rather than the magnitude of the number and also scored no marks. Unfortunately, some students left the decimal point in when converting to ordinary numbers and therefore often lost the mark in their explanation.

Question 23

In part (a) most students secured the mark for this question. As this was a calculator paper many students may have correctly processed this value using a calculator.

Only a minority of students secured the mark for part (b). There were many answers indicating that students had a limited knowledge of negative indices in standard form.

In part (c) many of the responses scored one mark for 4730, either by entering the calculation into the calculator or converting to 4200 + 530 but did not secure the accuracy mark by recognising that the answer needed to be in standard form.

Question 26

Very many students had clearly not covered standard form in depth and therefore were unable to make any meaningful sense of this question. 1630 and 16300 were common errors in part (a). In part (b) 438×10^3 was often seen.

In part (c), 4000 and 0.00006 were sometimes seen but no credit was given until a multiplication had taken place. Correct values of 0.24 and 24×10^{-2} were sometimes seen but rarely then put into standard form. Incorrect understanding of how the power changes was common with students writing 2.4×10^{-3} as their final answer. The majority of students appeared to score 1 mark for answers of the form 2.4×10^n where $n \neq -1$

Question 29

In part (a), there were many answers which included the digits 675 but rarely the correct response. Too many candidates appeared to want to give the answer as a standard form number. Examples of incorrect responses included 67 500 where they had multiplied by 10 000 rather than divided by 10 000 and 0006.75, demonstrating an incomplete understanding of standard form.
In part (b), many candidates struggled with the format of a number written in standard form. They were able to use their calculators to find 659 200 as the answer to the calculation but then struggled to put it into standard form; sometimes despite being able to convert from standard form to an ordinary number, gaining 1 mark instead of 2 marks, which was quite common. Those that failed to score often attempted to do it without the calculator or did not know how to enter numbers in standard form into their calculator.

Question 20

Part (a) was mostly answered correctly but several candidates failed to fully understand the need to use a number between 1 and 10 when converting to standard form and gave 468×10^3 as their answer. Generally, candidates showed they had counted the movement of the 'decimal point' to place it from the end to after the 4, and this usually led to the correct answer. When the wrong answer was given, it was usually due to counting the non zero digits and this gave the incorrect 4.68×10^3. In other instances candidates dropped the digits after the 4 to give 4×10^5.
In part (b) it was common to see 4 zeros put in front of the 5 and the decimal point not moved, omitted, or put after the third 0 to give 000.05037. It was common to also see the answer of 0.005037. Some candidates either did not see or did not know how to work with the negative index in standard form and gave the answer 50370.

Question 23

It was pleasing to see most students pick up 1 mark for converting from an ordinary number to standard form at this late stage in the paper on (a)(i).

Part (a)(ii) saw less success with fewer gaining the mark; common errors generally focused around an incorrect number of zeros or a misinterpretation of the power of ten e.g. taking the power to be positive instead of negative.

A good portion of students were able to gain 2 marks in part (b) for an answer of 3.42×10^7. Of those that didn't, many gained 1 mark, usually for an answer of 34 200 000 or 3.42×10^n, $n \neq 7$.

Question 27

This question was not attempted well by the majority of the cohort. Learners often attempted to convert from standard form to ordinary numbers, which gained no credit and was not necessary, but rarely recognised that they should then be attempting a division. Sometimes a partial mark was awarded for finding the figures 3125 but this was rare. A very small minority were able to reach the accurate answer for 2 marks. Practising use of a calculator for manipulation of numbers in standard form would be helpful for learners.

Question 18

Part (a) was answered well with a large proportion of the cohort able to give a correct answer. Part (b) saw less success with very few correct answers seen; common incorrect answers included 8.026×10^n where n was incorrect, often given as -4, and 0.8026×10^n was also seen.

Question 23

This question asked learners to work out $5.7 \times 10^2 + 9.8 \times 10^3$ giving their answer in standard form. There were some learners who were confident at interpreting standard form and were able to complete the question correctly, often by writing the two numbers as 570 and 9800 before adding these together and converting back into standard form. Some learners were able to write the two numbers as ordinary numbers and add these to obtain 10370 but did not convert back into standard form for the final answer. It was rare to see learners attempting to work by matching the powers of 10 for the two terms being added e.g. as $0.57 \times 10^3 + 9.8 \times 10^3$.

Common errors included misconceptions around the standard form notation which led to the numbers being interpreted as 5700 and 98000 which was not awarded credit. There were also those who attempted to combine 5.7 and 9.8 without noting, or ignoring, the difference in the

powers of 10 and then made incorrect attempts to combine the powers of 10 also (as 10^5 or 20 with or without a power), this led to answers such as 15.5×10^5.