

OCR • GCSE MATHEMATICS J560

Foundation Tier — Paper 3

Calculator

June 2025 exam series

MARK SCHEME

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Foundation

GCSE

Mathematics - Paper 3

J560/03: Paper 3 (Foundation tier)

General Certificate of Secondary Education

Mark Scheme for June 2025

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This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which marks were awarded by examiners. It does not indicate the details of the discussions which took place at an examiners' meeting before marking commenced.

All examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes should be read in conjunction with the published question papers and the report on the examination.

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MARKING INSTRUCTIONS

PREPARATION FOR MARKING RM ASSESSOR

1. Make sure that you have accessed and completed the relevant training packages for on-screen marking: *RM Assessor Online Training*; *OCR Essential Guide to Marking*.
2. Make sure that you have read and understood the mark scheme and the question paper for this unit. These are available in RM Assessor.
3. Log-in to RM Assessor then mark and annotate the **required number** of practice responses (“scripts”) and the **required number** of standardisation responses.

MARKING

1. Mark strictly to the mark scheme.
2. Marks awarded must relate directly to the marking criteria.
3. The schedule of dates is very important. It is essential that you meet the RM Assessor 50% and 100% deadlines. If you experience problems, you must contact your Team Leader (Supervisor) without delay.
4. If you are in any doubt about applying the mark scheme, consult your Team Leader via the RM Assessor messaging system.
5. **Crossed out responses**
Where a candidate has crossed out a response and provided a clear alternative then the crossed-out response is not marked. Where no alternative response has been provided, examiners should give candidates the benefit of the doubt and mark the crossed-out response where legible.

Contradictory Responses

When a candidate provides contradictory responses, then no mark should be awarded, even if one of the answers is correct.

6. On each blank page the annotation **BP** must be inserted to confirm that the page has been checked. For additional objects (if present), a tick must be inserted on each page to confirm that it has been checked.

7. There is a NR (**No Response**) option. Award NR (No Response):

- if there is nothing written at all in the answer space
- OR if there is a comment which does not in any way relate to the question (e.g., 'can't do', 'don't know')
- OR if there is a mark (e.g., a dash, a question mark) which is not an attempt at the question.

Note: Award 0 marks – for an attempt that earns no credit (including copying out the question).

8. The RM Assessor **comments box** is used by the Principal Examiner or your Team Leader to explain the marking of the practice responses. Please refer to these comments when checking your practice responses. **Do not use the comments box for any other reason.**

If you have any questions or comments for your Team Leader, use the RM Assessor messaging system.

9. Assistant Examiners should send a brief report on the performance of candidates to their Team Leader (Supervisor) by the end of the marking period. Please follow the direction of your Team Leader about which questions you should report on and how to submit your report. Your report should contain notes on particular strengths displayed as well as common errors or weaknesses. *Constructive criticism of the question paper/mark scheme is also appreciated.*
10. Annotations available in RM Assessor. These **must** be used whenever appropriate during your marking.

Annotation	Meaning
	Correct
	Incorrect
	Benefit of doubt
	Follow through

ISW	Ignore subsequent working (after correct answer obtained), provided method has been completed
M0	Method mark awarded 0
M1	Method mark awarded 1
M2	Method mark awarded 2
A1	Accuracy mark awarded 1
B1	Independent mark awarded 1
B2	Independent mark awarded 2
MR	Misread
SC	Special case
^	Omission sign
BP	Blank page
SEEN	Seen

For a response awarded zero (or full) marks a single appropriate annotation (cross, tick, M0 or ^) is sufficient, but not required.

For responses that are not awarded either 0 or full marks, you must make it clear how you have arrived at the mark you have awarded and all responses must have enough annotation for a reviewer to decide if the mark awarded is correct without having to mark it independently.

It is vital that you annotate standardisation scripts fully to show how the marks have been awarded.

Subject-Specific Marking Instructions

- i. **M** marks are for using a correct method and are not lost for purely numerical errors.
A marks are for an accurate answer and depend on preceding **M** (method) marks. Therefore, **M0 A1** cannot be awarded.
B marks are independent of **M** (method) marks and are for a correct final answer, a partially correct answer, or a correct intermediate stage.
SC marks are for special cases that are worthy of some credit.
- ii. The following abbreviations are commonly found in GCSE Mathematics mark schemes.
 - **figs 237**, for example, means any answer with only these digits. You should ignore leading or trailing zeros and any decimal point e.g. 237000, 2.37, 2.370, 0.00237 would be acceptable but 23070 or 2374 would not.
 - **isw** means **ignore subsequent working** after correct answer obtained and applies as a default.
 - **nfw** means **not from wrong working**.
 - **oe** means **or equivalent**.
 - **rot** means **rounded or truncated**.
 - **soi** means **seen or implied**.
 - **dep** means that the marks are **dependent** on the marks indicated. You must check that the candidate has met all the criteria specified for the mark to be awarded.
 - **with correct working** means that full marks **must not** be awarded without some working. The required minimum amount of working will be defined in the guidance column and **SC** marks given for unsupported answers.
3. Anything in the mark scheme which is in square brackets [...] is not required for the mark to be earned, but if present it must be correct.
4. Unless the command word requires that working is shown and the working required is stated in the mark scheme, then if the correct answer is clearly given and is not from wrong working **full marks** should be awarded.

 Do not award the marks if the answer was obtained from an incorrect method, i.e., incorrect working is seen and the correct answer clearly follows from it.
5. Where follow through (**FT**) is indicated in the mark scheme, marks can be awarded where the candidate's work follows correctly from a previous answer whether or not it was correct. For questions with FT available you must ensure that you refer back to the relevant previous answer. You may find it easier to mark these questions candidate by candidate rather than question by question.

 Figures or expressions that are being followed through are sometimes encompassed by single quotation marks after the word *their* for clarity, e.g. FT $180 \times (\text{their } '37' + 16)$, or FT $300 - \sqrt{(\text{their } '52' + 72')}$. Answers to part questions which are being followed through are indicated by e.g., FT $3 \times \text{their } (a)$.
6. In questions **with no final answer line**, make no deductions for wrong work after an acceptable answer (i.e., **isw**) unless the mark scheme says otherwise, indicated by the instruction 'mark final answer'.

7. In questions **with a final answer line and incorrect answer given**:

- (i) If the correct answer is seen in the body of working and the answer given on the answer line is a clear transcription error allow full marks unless the mark scheme says 'mark final answer'. Place the annotation ✓ next to the correct answer.
- (ii) If the correct answer is seen in the body of working but the answer line is blank, allow full marks. Place the annotation ✓ next to the correct answer.
- (iii) If the correct answer is seen in the body of working but a completely different answer is seen on the answer line, then accuracy marks for the answer are lost. Method marks could still be awarded if there is no other method leading to the incorrect answer. Use the **M0**, **M1**, **M2** annotations as appropriate and place the annotation ✕ next to the wrong answer.

8. In questions **with a final answer line**:

- (i) If one answer is provided on the answer line, mark the method that leads to that answer. A correct step, value or statement that is not part of the method that leads to the given answer should be awarded **M0** and/or **B0**.
- (ii) If more than one answer is provided on the answer line and there is a single method provided, award method marks only.
- (iii) If more than one answer is provided on the answer line and there is more than one method provided, award marks for the poorer response unless the candidate has clearly indicated which method is to be marked.

9. In questions with **no final answer line**:

- (i) If a single response is provided, mark as usual.
- (ii) If more than one response is provided, award marks for the poorer response unless the candidate has clearly indicated which response is to be marked.

When the data of a question is consistently misread in such a way as not to alter the nature or difficulty of the question, please follow the candidate's work and allow follow through for **A** and **B** marks. Deduct 1 mark from any **A** or **B** marks earned and record this by using the **MR** annotation. **M** marks are not deducted for misreads. If a candidate corrects the misread in a later part, do not continue to follow through, but award **A** and **B** marks for the correct answer only.

10. Unless the question asks for an answer to a specific degree of accuracy, always mark at the greatest number of significant figures even if this is rounded or truncated on the answer line. For example, an answer in the mark scheme is 15.75, which is seen in the working. The candidate then rounds or truncates this to 15.8, 15 or 16 on the answer line. Allow full marks for the 15.75.

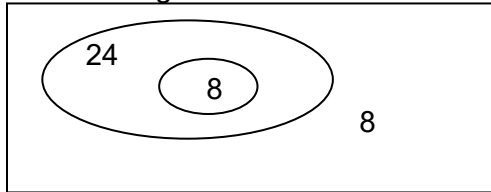
11. Ranges of answers given in the mark scheme are always inclusive.
12. For methods not described in the mark scheme, such as visual representations like bar models, ratio tables, give equivalent marks for equivalent work. If in doubt, consult your Team Leader.
13. If in any case the mark scheme operates with considerable unfairness consult your Team Leader.

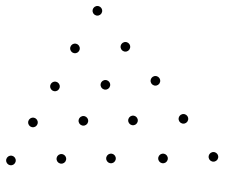
Question			Answer	Marks	Part Marks and Guidance	
1	(a)	(i)	Chord	1		Condone poor spelling
	(a)	(ii)	Circumference	1		Condone poor spelling
	(b)		Straight line drawn joining two points on circumference and through centre	1		Accept good freehand but no daylight with centre blob and finishing at circumference $\pm 2\text{mm}$ by eye.
2	(a)	(i)	4400 cao	1		
	(a)	(ii)	5.37 cao	1		
	(b)		520	2	M1 for 80 [$\times 65$] or 8 [$\times 65$] If 0 scored, SC1 for answer 481 or 455	Accept money as e.g. 520.0 or 520.00
3	(a)		5^6	1		Allow slightly lowered 6 but not 56
	(b)		1 cao	1		Not $1 \times 1 \times 1 \dots$
	(c)		37	2	B1 for 64 or 27	

Question			Answer	Marks	Part Marks and Guidance	
4	(a)		[0].01	1		
	(b)		$\frac{7}{20}$	2	B1 for $\frac{35}{100}$	Allow equivalent proper fraction for B1 e.g. $\frac{350}{1000}$ but not $\frac{3.5}{10}$
	(c)		300	3	M2 for 0.15×2000 oe OR M1 for $0.15 \times \text{figs } 2$ oe or B1 for [2 litres =] 2000 [ml] If 0 or 1 scored, instead award SC2 for 0.15×200 oe with answer 30	See appendix for non-calculator methods
5			Correct shape, orientation and location	2	B1 for correct enlargement, wrong centre or correct centre, one vertex out of tolerance or all correct vertices but no/some lines drawn	Mark the vertices $\pm 2\text{mm}$ Accept good freehand. Ignore lines used for construction and small extensions/gaps
6	(a)		122	2	M1 for $180 - 40 - 82$ oe or for $40 + 82$	Answer 58 with no working scores 0 M1 may be implied by 58 e.g. seen in correct position on diagram Must be explicit with no extras
	(b)		< 180	1		Mark answer line. If line blank accept any clear indication e.g. ringed, others deleted in list

Question			Answer	Marks	Part Marks and Guidance	
7			12.8[0]	3	M2 for $448 \div 5 \div 7$ oe or M1 for $448 \div 5$ may be implied by 89.6[0] or $448 \div 7$ may be implied by 64 or 35 [hours]	If working in minutes/pence calculations must be equivalent to award M marks Accept 1280 p as answer with £ crossed through for 3 marks
8	(a)		48	2	M1 for 4×8 or for $x \rightarrow -16 \rightarrow \div 4 = 8$ oe or for $\frac{x-16}{4} = 8$	M1 may be implied by 32 or $(48 - 16) \div 4 [= 8]$ Flow diagram may be reversed Accept any letter for x May be $(x - 16) \div 4 = 8$ Do not allow missing brackets
	(b)		24	2	M1 for correct method reaching figs(24 or 12) e.g. $\frac{36}{1.5}$ or $\frac{36}{150}$ or $\frac{36}{3}$	See appendix for non-calculator methods
9			No oe and [£105 =] 120.75 OR No oe and [€126 =] 109.5 to 109.6	2	Allow working in pence/cents then both amounts must be seen with correct units e.g. 12 075 c and 12 600 c M1 for 105×1.15 or 120.75 OR M1 for $126 \div 1.15$ or 109.5 to 109.6	Mark working wherever seen and “no” oe M1 may be implied by “No and he needs an extra [€] 5.25 oe” M1 may be implied by “No and it is [£]4.50 to [£]4.60 too much oe”

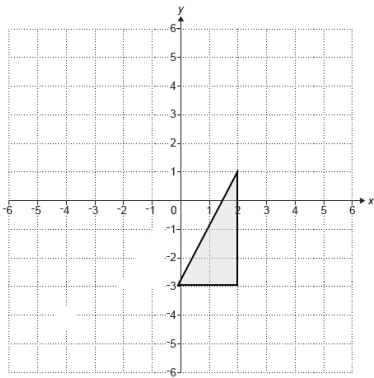
Question			Answer	Marks	Part Marks and Guidance	
10	(a)	(i)	7.5 or $7\frac{1}{2}$ oe cao	1		Ignore trailing zeros
	(a)	(ii)	43	2	B1 for 24×2 soi 48	
	(b)		[a =] 6 [b =] 13	3	M2 for $26 \div 2$ or $26 \div 13$ or M1 for $\frac{26}{8-a}$ oe where $a = 1, 2, 3, 4, 5$ If 0 or 1 scored, instead award SC2 for • answer – 6 and $\times 13$ or • correct answers reversed	M2 may be implied by seeing 2, 13 and 26 linked e.g. $(8 - 6) \times 13 = 26$ or factor tree For M1 “8 – a number” must be seen oe may be e.g. $8 - 4 = k$ then $k \times 6.5$ or $8 - 4 = k$ then k doesn't go into 26 oe
11	(a)		0.6 or 60% or $\frac{6}{10}$	1		Accept any equivalent fraction Do not accept in words or ratio
	(b)	(i)	1 0.1 + <i>their</i> 0.6 + 0.4 or 2 $1 - (0.1 + \textit{their} 0.6)$ oe or 3 $0.6 + 0.4 = 1$ and A valid comment implying not equal to 1 or 0.4 matching the calculation used	B1 B1	Dep on relevant calculation with correct answer seen	May be fractions or percentages Case 1 or 2: An answer does not need to be seen/correct to award first B1 Case 1 or 2: an answer must be seen and correct to award comment Example comments 1 The total should be 1 2 It should be 0.3 (not 0.4) 3 Nothing left for B See appendix

Question			Answer	Marks	Part Marks and Guidance									
	(b)	(ii)	Arrow drawn at 0.3 cao	1		No FT Mark intention								
	(c)		The spinner was spun many times oe	1										
12	(a)		Correct rows only <table><tr><td>A : B = 3 : 10</td><td></td></tr><tr><td>A : B = 3 : 7</td><td>✓</td></tr><tr><td>A is $\frac{3}{10}$ of the rectangle</td><td>✓</td></tr><tr><td>A is $\frac{3}{7}$ of the rectangle</td><td></td></tr></table>	A : B = 3 : 10		A : B = 3 : 7	✓	A is $\frac{3}{10}$ of the rectangle	✓	A is $\frac{3}{7}$ of the rectangle		2	B1 for one correct row only or B1 for one or two correct rows and one incorrect row only	Accept any clear indication e.g. ✕ rows 1 and 4 ruled out
A : B = 3 : 10														
A : B = 3 : 7	✓													
A is $\frac{3}{10}$ of the rectangle	✓													
A is $\frac{3}{7}$ of the rectangle														
	(b)		42k	2	M1 for [1 share =] 18[k] ÷ 3 or 6[k] or B1 for answer 42 or B = 42k	M1 may be seen as 3 × 6								
13			Correct diagram 	3	B2 for 8 correctly placed twice or M2 for $x + x + 32 - x = 40$ or better or M1 for $32 - x$ If 0 scored, SC1 for three numbers with two equal in correct position that sum to 40 e.g. 32 4 4	Accept any symbol for x [= n(S)] for M marks M2 may be $32 + x = 40$ If more than one number written in a subset, treat as choice and mark the worst								

Question			Answer	Marks	Part Marks and Guidance	
14	(a)	(i)	16	1		
	(a)	(ii)	Square [numbers]	1		Accept e.g. squared Do not accept n^2 oe
	(b)	(i)	All the dots in the triangle should be filled in/counted oe or There should be 10 [dots] oe or 9 is not a triangular number oe	1		
	(b)	(ii)	Correct diagram of 15 dots 	1		Ignore any numbers and mark diagram Diagram correct by eye with 15 dots drawn in correct arrangement. Ignore connecting lines, wobbles, different size dots but not extra dots unless clearly discarded/erased

Question			Answer	Marks	Part Marks and Guidance							
15	(a)		Correct row only <table><tr><td>Heidi gets a larger answer than Ben</td><td></td></tr><tr><td>Heidi gets a smaller answer than Ben</td><td>✓</td></tr><tr><td>Heidi gets the same answer as Ben</td><td></td></tr></table> and $\left[\frac{5}{8} = \right] 0.625$	Heidi gets a larger answer than Ben		Heidi gets a smaller answer than Ben	✓	Heidi gets the same answer as Ben		2	B1 for correct statement only selected B1 for correct conversion isw or correctly finding 0.63 and $\frac{5}{8}$ of the same amount isw	Accept any clear indication For second B1 Mark converted value(s) on the answer line first If insufficient converted value(s) on line, mark converted value(s) in body Accept both converted to comparable form e.g. 63% and 62.5% or $\frac{630}{1000}$ and $\frac{625}{1000}$. Condone $\frac{63}{100}$ and $\frac{62.5}{100}$ condone rounding/truncation to a level to compare quantities
Heidi gets a larger answer than Ben												
Heidi gets a smaller answer than Ben	✓											
Heidi gets the same answer as Ben												
	(b)		$k \times 10^2$ where k is one from 3.1415927, 3.141593, 3.1416, 3.142 leading to 314.15927, 314.1593, 314.16, 314.2	2	B1 for $k \times 10^2$ where k is one from 3.1415927, 3.141593, 3.1416, 3.142	For 1 or 2 marks • Accept 100 for 10^2 • must see value of π not just $\pi \times 10^2$ Do not accept answer giving rounded value from use of accurate π e.g 314.1592654 = 314.2 [to 1dp]						

Question			Answer					Marks	Part Marks and Guidance																										
16	(a)		<table><tr><td>×</td><td>3</td><td>4</td><td>5</td><td>6</td></tr><tr><td>3</td><td>9</td><td>12</td><td>15</td><td>18</td></tr><tr><td>4</td><td>12</td><td>16</td><td>20</td><td>24</td></tr><tr><td>5</td><td>15</td><td>20</td><td>25</td><td>30</td></tr><tr><td>6</td><td>18</td><td>24</td><td>30</td><td>36</td></tr></table>					×	3	4	5	6	3	9	12	15	18	4	12	16	20	24	5	15	20	25	30	6	18	24	30	36	1		
			×	3	4	5	6																												
			3	9	12	15	18																												
			4	12	16	20	24																												
			5	15	20	25	30																												
6	18	24	30	36																															
	(b)		$\frac{3}{16}$ oe					2FT	Strict FT <i>their</i> table for multiples of 8 M1 for 16 and both 24s and any FT multiples of 8 identified with no extras or omissions or for $\frac{\textit{their } 3}{n}$ where $n \geq 13$	Do not accept ratio or words Accept 0.187[5], 0.188, 18.7[5]% or 18.8% If scoring fraction seen in body isw attempt to change form or cancel to final answer Note: If (a) is NR (b) $\frac{3}{16}$ scores 2 marks and $\frac{3}{n}$ where $n \geq 13$ scores 1 mark																									

Question			Answer	Marks	Part Marks and Guidance	
17			Correct translation 	2	B1 for a translation $\begin{pmatrix} 3 \\ k \end{pmatrix}$ or $\begin{pmatrix} k \\ -2 \end{pmatrix}$ or three correct points not joined or three joined points and one just out of tolerance	k can be 0 mark intent (vertices within ± 2 mm of correct position by eye) Ignore “counting” dots, intermediate position dots and dots on perimeter To be considered for the mark one point would need to be less than half way to the next gridline and the others in tolerance

Question			Answer	Marks	Part Marks and Guidance	
18	(a)		15	3	M2 for $\left(1 - \frac{382.5[0]}{450}\right) [\times 100]$ oe or $\left(\frac{450 - 382.5[0]}{450}\right) [\times 100]$ oe or $\left(\frac{382.5[0] - 450}{450}\right) [\times 100]$ oe or M1 for $\frac{382.5[0]}{450} [\times 100]$ oe	Condone –15 for 3 marks M2 may be implied by ± 0.15 or $\pm \left(\frac{67.5}{450}\right)$ or $\pm \frac{3}{20}$ M1 may be implied by 0.85 or 85 or $\frac{17}{20}$ Non-calculator methods score 3 marks for correct answer or M2 when equivalent to main scheme e.g. (second M2 method) $100(\%) = 450$ $10(\%) = 45$ $1(\%) = 4.5$ M2 $(450 - 382.5[0]) \div 4.5$
	(b)		Vertical axis doesn't start from 0 oe or Jan price looks [less than] half Dec price oe or the difference between 382[.50] and 450 looks much bigger than it really is oe	1		Ignore - any reference to the horizontal axis - any insufficient reason that does not contradict the correct reason (if two reasons given) BUT, if two reasons offered and one reason clearly incorrect, mark the worst See Appendix

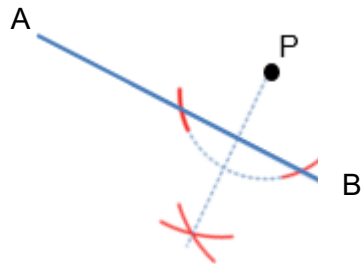
Question			Answer	Marks	Part Marks and Guidance	
19			7.5 with correct working	4	M3 for $5 \times \frac{6}{4}$ oe or $5 \div \frac{4}{6}$ oe OR B2 for [base lengths] 4 and 6 or B1 for [base lengths] 4 or 6 and M1 for $5 \times \frac{\text{their } 6}{\text{their } 4}$ oe or $5 \div \frac{\text{their } 4}{\text{their } 6}$ oe If 0 scored, SC1 for answer 7.5 with no or insufficient working	Correct working requires M3 or B2M1 If working in rounded decimals with 2 dp seen allow M marks but A0 if 7.5 rounded from inexact value May be implied by $[5] \times 1.5$ or e.g. as arrow from X to Y with “$\times 1.5$” on it or, in parts e.g. $5 \times 6 = k$ then $k \div 4$ May be on diagram 4 and 6 not number of edges so $16 \div 4$ and $36 \div 4$ score B0 or base edges 4 and 9 score B0 <i>Their</i> 4 and <i>their</i> 6 are their chosen base lengths and not 16 and 36 Alternative M2 for [length factor] $\sqrt{\frac{36}{16}}$ or $\frac{6}{4}$ oe or $\sqrt{\frac{16}{36}}$ or $\frac{4}{6}$ oe or M1 for area factor oe = $\frac{36}{16}$ oe or $\frac{16}{36}$ oe M1 for $5 \times \frac{\text{their } 6}{\text{their } 4}$ oe or $5 \div \frac{\text{their } 4}{\text{their } 6}$ oe

Question			Answer	Marks	Part Marks and Guidance	
20	(a)		$\frac{5}{12}$ or equivalent fraction	2	M1 for $[1-] \frac{1}{3} + \frac{1}{4}$ oe isw	M1 May be implied by $\frac{7}{12}$ or 0.58[3...] M1 may be seen as decimals or percentages allowing incorrect/inexact conversions if clearly from $\frac{1}{3}$ and/or $\frac{1}{4}$ e.g. $\frac{1}{3} = 1.3$ and $\frac{1}{4} = 1.4$ and $1.3 + 1.4$
20	(b)		84 with correct working	5	B3 for 35 [yellow cupcakes] or 5040 [g icing] OR M2 for $(700 + 1400) \div 60$ or $700 \div 20$ or [yellow cupcakes =] figs 35 or $(700 + 1400) \times \text{their} \frac{12}{5}$ FT (a) or B1 for figs 14 or 20 [g of butter per cake] or 0.02 [kg of butter per cake] AND M1 for $\text{their} 35 \times \text{their} \frac{12}{5}$ FT (a) or $\text{their} 5040 \div 60$ If 0 or 1 scored, instead award SC2 for answer 84 with no or insufficient working	Correct working requires evidence of at least M2 or B3 Allow in kg or $(0.7 + 1.4) \div 0.06$ or $0.7 \div 0.02$ May be ratio in which butter is 20 e.g. [butter : sugar] 20 : 40 <i>Their</i> 35 any integer understood to be the number of yellow cupcakes

Question			Answer	Marks	Part Marks and Guidance	
21			796 or 795.67 to 796.4	4	M2 for $[r =] \frac{50}{2\pi}$ oe or B2 for 7.96 or 7.956 to 7.958 or M1 for $2\pi r = 50$ oe and M1 for $4 \times \pi \times (their\ r)^2$ oe or $4 \times \pi \times \left(\frac{50}{2\pi}\right)^2$ oe	Accept $\frac{2500}{\pi}$ or $253.3[\dots]\pi$ for 4 marks May be $50 \div \pi \div 2$ or $25 \div \pi$ Note $\frac{50}{2\pi} = 7.956 \approx 8$ then $4 \times \pi \times 8^2$ scores M2 M1 A0 For M1 substitution of <i>their r</i> must be explicit <i>Their r</i> may be any value from 3 to 10 understood to be <i>their</i> radius π may be substituted with 3.142 or calculator value, allowing 3.14 and $\frac{22}{7}$

Question			Answer	Marks	Part Marks and Guidance	
22			[diamond =] 8 [ruby =] 5 with correct working	5	B4 for one correct answer with correct working OR M1 for $4d + 3r = 47$ oe M1 for $3d + 5r = 49$ oe M1 for correct method to equate coefficients of one variable allowing one arithmetic error M1 for correct method to eliminate one variable allowing one arithmetic error If 0 or 1 scored, instead award SC2 for [diamond =] 8 and [ruby =] 5 with no or insufficient working If 0 scored, instead award SC1 for two integer answers which satisfy one of the original conditions	Correct working requires evidence of at least M1 M1 M1 Mark the method leading to answer. If no answer, treat different methods as choice and mark the worst Accept other letters and “diamonds/rubies” seen in equations The last two M marks are dependent on first M1M1 (two correct equations) e.g. $12d + 9r = 141$ and $12d + 20r = 196$ or $20d + 15r = 235$ and $9d + 15r = 147$ e.g. $11r = 55$ or $11d = 88$ Note: A sign error is not an arithmetic error If substitution method used apply first two M1s then, if M1M1 awarded, M1 for correctly rearranging an equation M1 for correct substitution into other equation
					Alternative method of Trials $4 \times 8 + 3 \times 5 = 47$ and $3 \times 8 + 5 \times 5 = 49$ and correct answer scores 5 or $4 \times 8 = 32$ then $(47 - 32) \div 3 = 5$ and $3 \times 8 = 24$ then $(49 - 24) \div 5 = 5$ (or $3 \times 8 + 5 \times 5 = 49$) (5 may be substituted and used to find 8) or M1 for one correct trial of integer values for d and r in one case e.g. $4 \times 6 + 3 \times 5 = 39$ oe or $3 \times 6 + 5 \times 5 = 43$ oe oe may be substitution of an integer value into one relationship and “solving” to find the second value, which may be non-integer e.g. $4 \times 6 = 24$ then $(47 - 24) \div 3 = 7.6...$ SC still available if Trials used	

Question			Answer	Marks	Part Marks and Guidance	
23			One rectangle 8 cm by 4 cm	2	B1 for one rectangle 8 by n or m by 4	Accept in any orientation, good freehand, tolerance for length ± 2 mm by eye Additional shapes/lines or a net score 0 Other shapes/lines must be clearly deleted to allow 1 or 2 marks
24	(a)		69.5 $[\leq w <]$ 70.5	2	B1 for each If 0 scored SC1 for • correct but reversed or • 69.50 $[\leq w <]$ 70.50	
	(b)		Accept any correctly matched pair of values in which space < fridge from these ranges 69.5 $\leq$ space < 69.55 e.g. s = 69.5 and 69.5 < fridge < 69.55 and f = 69.54	2	B1 for one value for space or fridge where 69.5 $\leq$ space < 69.55 e.g. s = 69.5 or 69.5 < fridge < 69.55 e.g. f = 69.51	Error interval (e.g. ... $\leq$ space < ...) alone scores 0 Only mark candidate's chosen value(s) Measurements used must be clearly associated with space and/or fridge Space < fridge does not need to be stated For B1 if one or multiple values for fridge/space seen and no clear choice all must be in correct ranges

Question			Answer	Marks	Part Marks and Guidance	
25			Ruled line through P and perpendicular to AB constructed with correct arcs (one pair intersecting AB)	2	B1 for correct arcs (one pair intersecting AB) only but no line or for correct ruled line but no, or incomplete, construction arcs 	Condone dotted lines Set protractor to 90° and check 88° to 92° at AB Correct construction arcs as shown (may be two pairs of arcs used to draw line through P) Ignore other arcs if correct arcs clearly used to construct line Condone perpendicular extending beyond AB but must pass through P and reach AB (no daylight) Alternative (eg constructing a kite) Arc centred on A length AP and arc centred on B length BP meeting below AB (may also pass through P). Candidates may use points on AB other than A and B for this construction. In such cases check radii of arcs using on-line ruler to judge See appendix for exemplars
26	(a)		7	3	M2 for $8x - 6x = 3 + 11$ oe OR M1 for $2x - 11 = 3$ or for $2x = k$ or for $8x = 14 + 6x$ or for $kx = 14$ M1 for $x = \frac{b}{a}$ FT <i>their</i> $ax = b$ seen	Embedded 7 scores M2 e.g. $8 \times 7 - 11 = 6 \times 7 + 3$ [= 45] identified as final working or written on answer line e.g. $2x = -8$ and answer line -4 with no other working scores M1 and M1FT

Question			Answer	Marks	Part Marks and Guidance	
	(b)		$(x + 16)(x - 1)$ -16 and 1	M2 B1FT	M1 for $(x + a)(x + b)$ where $ab = -16$ or $a + b = 15$ or $x(x + 16) - [1](x + 16)$ or $x(x - 1) + 16(x - 1)$ For correct solutions from <i>their</i> quadratic factors (strict FT) If 0 scored, instead award SC1 for answers ± 16 and ± 1	Condone final bracket missing Accept $x + 16 = 0$ and $x - 1 = 0$ for M2 Allow correctly completed grid for M1 $(x - 16)(x + 1)$ with answers -16 and 1 scores M1B0

APPENDIX
Exemplar responses for

APPENDIX

Non Calculator methods for percentages.

Labels only

This is when labels such as 10% = are used.

If only labels are used the final answer scores full marks if it is correct.

Condone a numerical slip if the answer is correct.

If there is an error in the values and so the **final answer is incorrect** this cannot score method marks

e.g. Find 65% of 80

Method scoring M1A1

$$10\% = 8$$

$$5\% = 4$$

$$50\% = 40$$

$$65\% = 52 \quad \checkmark \quad \text{M1A1}$$

$$10\% = 8$$

$$5\% = 5 \quad \times \quad \text{condone this slip as answer correct}$$

$$50\% = 40$$

$$65\% = 52 \quad \checkmark \quad \text{M1A1}$$

Method scoring M0A0

$$10\% = 8$$

$$5\% = 6 \quad \times$$

$$50\% = 40$$

$$65\% = 54 \quad \times \quad \text{M0}$$

Do not condone this slip as answer incorrect

Build up method

This is where the candidate finds the percentages to build up to the required value but shows the operations used.

e.g. Find 65% of 80

$$10\% = 80 \div 10 = x$$

$$5\% = x \div 2 = y$$

$$50\% = x \times 5 = z$$

$$65\% = x + z + y$$

Because the operations have been shown and they are correct, if there is an error in one of x, y or z, method marks can still be earned

Appendix

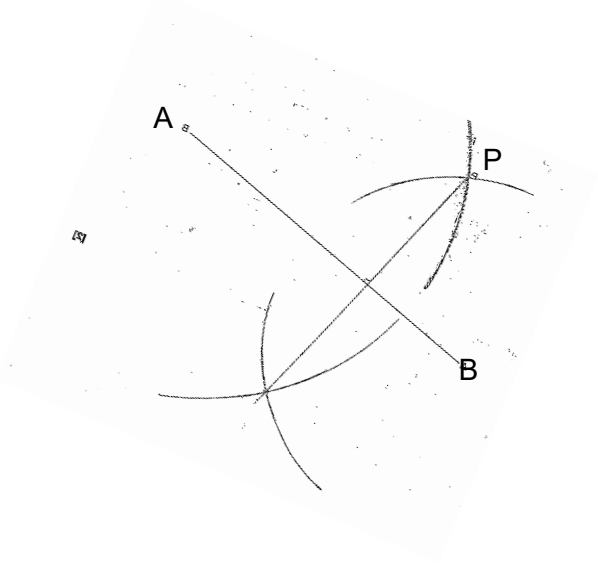
Question 11bi

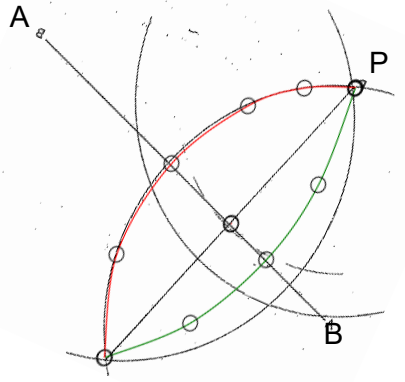
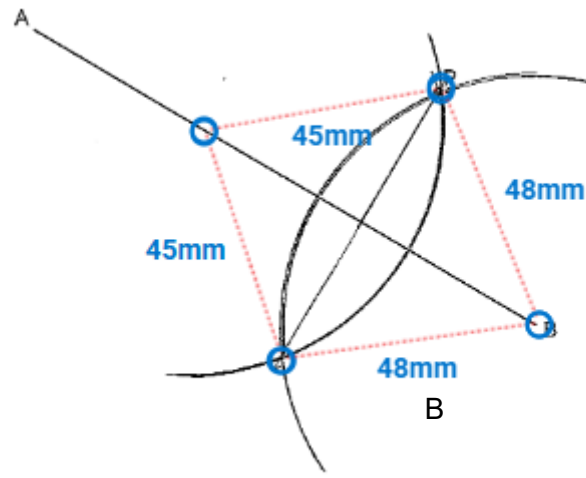
Assumption	Mark	Reason
$0.1 + 0.6 = 0.7$ which means it's 0.3 He didn't add 0.1	B0B0	Calculation is correct but incomplete B0 and final comment does not need to be considered following B0
$1 + 6 + 4$ adds up to 1.1 not 1	B0B0	The calculation is incorrect B0 and so the comment does not score
$0.4 + 0.1 + 0.6 = 11.1$ and frequencies have to add to 1	B1B0	B1 for the calculation (answer does not need to be correct for first B1) but B0 for comment as answer does need to be correct to reward this

Question 18b

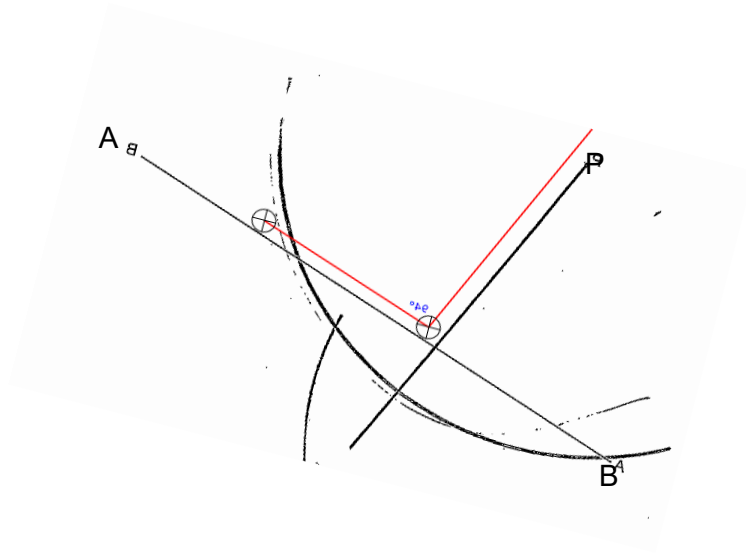
Assumption	Mark	Reason
The y-axis does not start at zero	1	Condone use of y-axis
The price axis does not start at zero	1	
The months are in the wrong order and the y-axis doesn't start from 0	1	Ignore reference to horizontal. Second is correct
Because it shows the drop in price is very bad but in reality, it's not that much	1	BOD third reason
The graph does not start at zero	0	Ambiguous, implies the line starting at bottom left corner
It does not start at zero	0	"It" is not enough to identify vertical axis
There are no numbers between 382.5 and 450	0	Does not say "Not starting at zero"
The y-axis isn't going up in equal amounts	0	Does not say "Not starting at zero"
The y-axis is not set out properly	0	Does not say "Not starting at zero"
It doesn't start at the bottom of the graph/y-axis	0	Does not say "Not starting at zero"
y-axis scale uneven, not equal, not going up by the same value	0	they are assuming a start from zero (but don't say it) and you can't tell from two values
The gap on the y-axis is too large	0	For what?
No numbers for the interval between the two prices	0	Does not say "Not starting at zero"
There aren't enough values on the y-axis	0	Does not say "Not starting at zero"
Does not have regular intervals	0	Does not say "Not starting at zero"
No clear scale for the y-axis	0	Does not say "Not starting at zero"
The scale is not complete	0	Does not say "Not starting at zero"
Because the price of the laptop axis starts from £382.50	0	Does not say "Not starting at zero"
It does not have all of the months from the start of the year	0	Ignore reference to horizontal
It should be January to December	0	Ignore reference to horizontal

Question 25

Response		Mark
A		Scores 2 This is a correct alternative method for arcs centred on A and B Use overlay to see arcs lie within circles (We can also check using on-line ruler) Candidates may use points on AB other than A and B for this construction. In such cases check radii of arcs using on-line ruler to judge.

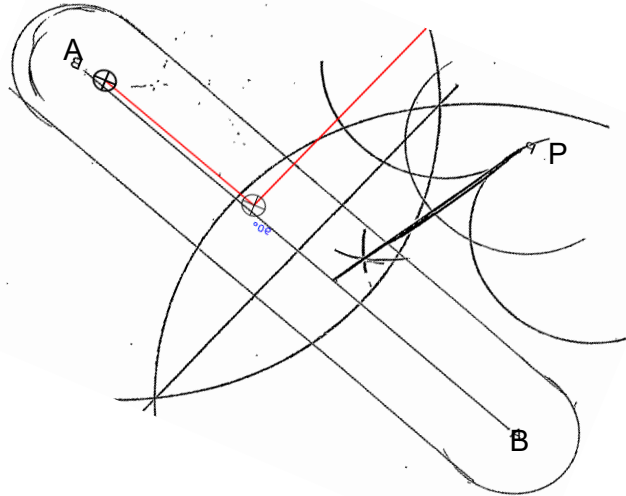
B		Scores 2 This is the main method not the alternative. Arc from P intersects AB at B and another point. Red arc from B intersects the arc from that other point.
C		Scores 2 There is an arc from B through P. Another arc passes through P but its centre on AB is not identified - perhaps a small compass hole on the hard copy? This arc should have symmetry in line AB. This may need to be confirmed using the ruler tool.

D

**0 marks**

Only one correct (pair of) arcs (One arc centred on P and cutting AB twice) and inaccurate line.

E

**0 marks**

No valid sets of arcs nor a correct line

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