Foundation

GCSE

Mathematics - Paper 1

J560/01: Paper 1 (Foundation tier)

General Certificate of Secondary Education

Mark Scheme for June 2022

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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.

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

4. Mark strictly to the mark scheme.

5. Marks awarded must relate directly to the marking criteria.

6. 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.

7. If you are in any doubt about applying the mark scheme, consult your Team Leader via the RM Assessor messaging system.

8. 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.

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

10. 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.

11.   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.

The hash key (#) on your keyboard will enter NR.

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

12.   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.

13.   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.

14.   Annotations available in RM Assessor. These **must** be used whenever appropriate during your marking.

Annotation	Meaning
✔	Correct
✘	Incorrect
BOD	Benefit of doubt
FT	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

15.   **M** marks are for <u>using a correct method</u> and are not lost for purely numerical errors.
       A marks are for an <u>accurate</u> answer and depend on preceding **M** (method) marks. Therefore **M0 A1** cannot be awarded.
       B marks are <u>independent</u> of **M** (method) marks and are for a correct final answer, a partially correct answer, or a correct intermediate stage.
       SC marks are for <u>special cases</u> that are worthy of some credit.

16.   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.
-   **nfww** 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.

17.   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.

18.   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 <u>not from wrong working</u> **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.

19.   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 × (*their* '37' + 16), or FT 300 − √(*their* '52 + 72'). Answers to part questions which are being followed through are indicated by e.g. FT 3 × *their* (a).

20.   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'.

21.   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.

22.   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.

23.   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.

24.   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.

25. 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.

26. Ranges of answers given in the mark scheme are always inclusive.

27. For methods not provided for in the mark scheme give as far as possible equivalent marks for equivalent work. If in doubt, consult your Team Leader.

28. If in any case the mark scheme operates with considerable unfairness consult your Team Leader.
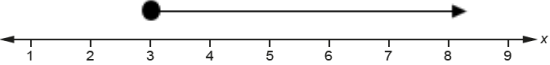
Question			Answer	Marks	Part marks and guidance	
1	(a)		Octagon	1		Condone poor spelling Ignore embellishments
	(b)		12	1		
2	(a)		3	1		
	(b)		10	2	**B1** for only 2 and 12 identified	
3	(a)		110	1		In both parts, if answer line blank may be in correct place on diagram
	(b)		70	1		
4			No, they need 9 boxes oe with correct working	2	**M1** for 590 ÷ 73, 590 ÷ 8 or 73 × 8 If **0** scored, **SC1** for 8.08[2…], 8.1, 73.7[5], 73.8, 584 or 6	Correct working requires **M1** Allow **M1** for repeated addition/subtraction if method shown. If only numbers listed addition must reach 584, subtraction must reach 6 See Exemplars
5			2 correct from e.g. Bars are unequal width Vertical scale is not linear Vertical axis does not start at 0	2	**B1** for each	Both marks may be scored in one sentence See Exemplars
6	(a)		8	1		
	(b)		23 or 83	1		Accept both but no extras

Question			Answer	Marks	Part marks and guidance	
	(c)		283	1		
7	**(a)**		$2t$ final answer	1		Accept $2 \times t$ Condone $t2$
	(b)		$x(x + 2)$ final answer	1		Accept e.g. $1x(x + 2)$, $(x + 0)(x + 2)$ Condone final bracket missing
8			0.5209 52.9[%] $\frac{9}{17}$ $\frac{530}{1000}$	2	**B1** for 3 in the correct order or **M1** for correct conversion of all values into a comparable form e.g 0.529 0.53 0.5294 0.5209 oe	Answers may be given in correct converted form
9			54	3	**M2** for $36 \div 2 \times 3$ oe or $36 + 18$ or **M1** for $36 \div 2$ oe may be soi by 18 OR breakdown method **B2** for 36 associated with $\frac{2}{3}$ and 18 associated with $\frac{1}{3}$ or **B1** for 36 associated with $\frac{2}{3}$ or 18 associated with $\frac{1}{3}$	Allow 0.66… to imply 2/3 Do not accept e.g. $36 \times \frac{2}{3}$ May be shown e.g. on a bar model 36 associated with $\frac{2}{3}$ **and** 12 associated with $\frac{1}{3}$ scores 0
10			62.5 or $62\frac{1}{2}$ or $\frac{125}{2}$	2	**B1** for 3906.25 or $3906\frac{1}{4}$ or $\frac{15625}{4}$	

Question			Answer	Marks	Part marks and guidance	
11	(a)		75 11 45 19	4	**B1** each correct OR **B1** for 75 **B1 FT** for 45 **B1 FT** for 11 and 19	Mark to candidate's advantage, ie **B1** each correct or part marks including possible **FT** Negative numbers will not score. Values must be integers.
	(b)		$64 + 26 = 90$ and $\frac{90}{120} = 75\%$ nfww OR $120 \times 0.75 = 90$ and $64 + 26 = 90$ oe	2	**M1** for $64 + 26 = 90$ OR **M1** for $120 \times 0.75 = 90$ OR **M1** for $\frac{90}{120} = 75\%$ nfww	Accept $\frac{3}{4}$ for 75% Allow equivalent methods using 25% or $\frac{1}{4}$ for **M1** or **2** If using 25% for **2** marks they must also show $100\% - 25\% = 75\%$ oe Breakdown methods must be complete and correct Do not accept e.g. 0.75 **of** 120 Do not accept e.g. 75**%** $\times$ 120 Do not accept 75% for 0.75 or $\frac{75}{100}$ as this is a show that question

Question			Answer	Marks	Part marks and guidance	
12			131.7[…] or 132	4	**M1** for [rectangle] 16 × 10 soi 160 **M1** for [circle] $\pi \times 3^2$ oe soi 28.2 to 28.3 **M1** for *their* rectangle area – *their* circle area If **0** or **1** scored, instead award **SC2** answer 46.9[…]	Method for rectangle and circle areas spoilt by additional steps in initial area calculations e.g. **M0** for 16 × 10 × 2 Do not lose **M1** for [rectangle] or **M1** for [circle] if further work does not include these, provided it is not contradicted by further method *Their* circle area should be from $\pi \times 3^2$ or $\pi \times 6^2$ eg soi by 113.[…] **not** $2\pi r$
13	**(a)**		36	4	**M3** for (2 × 22 + 4 × 18) – 80 oe or **M2** for 2 × 22 + 4 × 18 may be implied by 44 + 72 or 116 or **M1** for 2 × 22 or 4 × 18 may be implied by 44 or 72	
	(b)		52.7[0]	4	**M3** for 0.85 × (2 × 22 + 18) oe soi by 0.85 × 62 or **M2** for 0.85 × *their* price oe may be done in stages, soi by 15.3[0], 18.7[0], 34[.00], 37.4[0], or 68[.00] or 0.15 × (2 × 22 + 18) oe soi by 0.15 × 62 or 9.3[0] or **M1** for 0.15 × *their* price oe may be done in stages, soi by 2.7[0], 3.3[0], 6[.00], 6.6[0], or 12[.00]	oe includes reducing individual prices before summing *their* price must be 18, 22, 18+22 or 40, 22+22 or 44, or 80 If done in stages, award **M2** or **M1** if at least one correct calculation

Question			Answer	Marks	Part marks and guidance	
14	(a)		3	2	**M1** for (150 − 90) ÷ 20	Condone 150 − 90 ÷ 20 for **M1**
	(b)		[0]9:45 [am] with correct working	5	**M1** for 6 × 20 + 90 oe **A1** for 210 **M1** for *their* 210 correctly converted into hrs and mins or decimal hours soi by 3 h 30 m or 3.5 [h] **M1** for 1:15 − *their* time If **0**, **1** or **2** scored, instead award **SC3** for answer 9:45[am] with no working or insufficient working If **0** or **1** scored, instead award **SC2** for 3 h 30 m or 3.5 [h] with no working or insufficient working If **0** scored, **SC1** for 210 with no working or insufficient working	"correct working" requires evidence of at least **M1 M1** Provided *their* 210 is not a multiple of 60 Do not accept 3.3 hours as a correct conversion from 3 h 30 m, but condone 3.3 used in the next step *Their* time may be in whole hours, minutes, hrs and mins or decimal hours
15	(a)		$\begin{pmatrix} -5 \\ 2 \end{pmatrix}$	2	**B1** each value or **SC1** for $\begin{pmatrix} -5 \\ 2 \end{pmatrix}$ or $\begin{pmatrix} 2 \\ -5 \end{pmatrix}$	Do not accept coordinates
	(b)		$\begin{pmatrix} 5 \\ -2 \end{pmatrix}$ drawn with correct arrow	1		
16			100	3	**M2** for 150 ÷ 3 × 2 or **M1** for 150 ÷ 3 soi 50 nfww	

Question			Answer	Marks	Part marks and guidance	
17			$x \geq 3$	4	**B2** for $x \geq 3$ or **M1** for $2x \geq 11 - 5$ or better or $x + 2.5 \geq 5.5$ or better	<u>Solution to inequality</u> Allow **M1** for this expression with other inequality symbols or equals sign or [x =] 3 as solution (can be implied by mark/circle on the diagram) or trials leading to selection of 3 or final correct trial using 3
			AND		AND	<u>Displaying the solution:</u>
					B2FT for *their* inequality correctly shown or **B1FT** for correctly placed circle for *their* $x \geq 3$ but with hollow circle and correct arrow or for filled circle with incorrect arrow	Display must show an inequality that fits on the number line for FT Mark to candidate's advantage either $x \geq 3$ or *their* inequality Accept an arrow of any length or a line reaching 9 <u>If no solution to inequality seen:</u> Filled circle at 3 arrow to right **M1B2** Filled circle at 3 arrow to left **M1B1** Hollow circle at 3 arrow to right **M1B1** Hollow circle at 3 arrow to left **M1B0** Mark at 3 no line or arrow **M1B0** Circle and/or arrow at other than 3 **M0B0**

Question			Answer	Marks	Part marks and guidance	
18	(a)		6.05×10^6	1		Condone extra zeros and notation such as 6.05×10^{06} and $6.05 \cdot 10^6$ but not $6.05^{\times 10^6}$ or 6.05^{06}
	(b)		[0].00458	1		Condone extra zeros
19			180	3	**M2** for $149.4 \div 0.83$ **oe** or **B1** for 0.83 **oe** seen [in working towards their answer] or for 149.4 associated with 83% **isw** If non calculator method needs to be fully correct	For **B1** 0.83 **oe** allow fraction but not just 83%

Question			Answer	Marks	Part marks and guidance	
20			[127] 148 149 296 in any order With correct working	5	**M3** for 4*x* and 592 or for (180 × 4 – 127 – 1) ÷ 4 **A1** for 148 or **M2** for a correct algebraic expression and correct constant or for 180 × 4 – 127 [– 1] or for 127+148+149+296=180 ×4 oe or for trials leading to the correct answer or **M1** for 127 + *x* + *x* + 1 + 2*x* nfww or 180 × 4 or 720 If **0** or **1** scored, instead award **SC2** for 148 149 296 in any order with no or insufficient working If **0** scored, **SC1** for [*x*=]148	"correct working" requires at least **M2** 180 × 4 can be implied by 720 throughout eg 127 + *x* + *x* + 1 + 2*x* and 720; 4*x* + 1 and 593 Do not accept *x*, 2*x* or *x* + 1 as correct algebraic expressions for **M2** Condone e.g. 127 + *x* + *x* + 1 + 2*x* ÷ 4 for **M1** Mark to candidates advantage
21	(a)		2 points accurately plotted	2	**B1** for each	tolerance ± $\frac{1}{2}$ small square radially and ignore other plotted points
	(b)		Negative	1		Ignore embellishments

Question			Answer	Marks	Part marks and guidance	
	(c)		ruled straight line of best fit	**B1**		Overlay is a guide only, *their* line must be between or through (500, 8) to (500, 10) and (1500, 1) to (1500, 3) and meeting both 500 and 1500 lines
			5 − 6.5	**B1**	If **B0 FT** *their* ruled straight line of best fit with negative gradient and meeting both 500 and 1500	
	(d)		(1200, 9.2) indicated	1		Ignore points indicated as answers for parts (a), (c) and (f)
	(e)		Accept any correct explanation	1		see appendix
	(f)		40	3	**B1** for 6 if **2** not scored in **(a) FT** *their* diagram **M1** for $\frac{6 \; or \; their \; 6}{15 \; or \; their \; 15}$ [× 100] **M1** for correctly converting *their* fraction to a percentage (less than 100%) rounded or truncated	for **B1 FT** *their* diagram must not include a point for part **(c)** for **M1** *their* 6 is their number of points under 6°C *their* 15 is the total number of **plotted** points (may include one for **(c)**) e.g. $\frac{7}{15}$ = 46 or 47 or 46.6 to 46.7
22	**(a)**		11 -5	2	**B1** for each	
	(b)		Correct curve	3	**B2ft** for 7 or 8 points accurately plotted or **B1ft** for 5 or 6 points accurately plotted	Tolerance $\pm\frac{1}{2}$ small square radially

Question			Answer	Marks	Part marks and guidance	
	(c)		−2.3 or −2.2 2.2 or 2.3	**2 FT**	Strict **FT** **B1** for either **FT** *their* graph	If curve is between 2 grid lines accept either value as correct answer Do not accept answers to more than 1d.p. Do not allow ±√5 or answers with no graph
23	**(a)**		24.5 25.5 cao	**2**	**B1** for each If **0** scored **SC1** for correct but reversed or for 24.50[0] and 25.50[0]	

Question			Answer	Marks	Part marks and guidance	
	(b)		4 × 25.5 or 4 × *their* upper bound in (a)	**M1**		**M0** if *w* = 25 used
			102 or correct answer to 4 × *their* upper bound	**A1**		
			Yes and *their* 102 </≤ 102.4 in symbols or words	**1 dep**	Dep on previous 2 marks Conclusion and clear comparison **FT** *their* upper bound in (a)	Yes/ no conclusions must be consistent with their working
			<u>Alternative method 1</u> 102.4 ÷ 4	**M1**		
			25.6	**A1**		
			Yes and *their* 25.5 </≤ 25.6 in symbols or words	**1 dep**	Dep on previous 2 marks Conclusion and clear comparison **FT** *their* upper bound in (a)	
			<u>Alternative method 2</u> 102.4 ÷ 25.5 or 102.4 ÷ *their* upper bound	**M1**		
			4.01(…) or correct answer to 102.4 ÷ *their* upper bound	**A1**		
			Yes and 4 </≤ *their* 4.01(…)	**1 dep**	Dep on previous 2 marks Conclusion and clear comparison **FT** *their* upper bound in (a)	

Question			Answer	Marks	Part marks and guidance	
24	(a)		122	4	**B3** for 121.5[…] leading to an answer 121[.5…] or 1215.2[…] leading to an answer 1215 or 12.15[…] leading to an answer 12 OR **M3** for $\frac{3.5\times1000\times100}{2\times60\times24}$ oe OR **M1** for correct time conversion to a day e.g. [2×] 60×24 and **M1** for one distance km to cm or one distance cm to km or two distances to metres and **M1** for distance divided by rate e.g. $\frac{3.5\times100\times100}{2\times60\times24}$ to a maximum of **M2**	ignore any units throughout e.g. 3500 ÷ 28.8 **M1 M1** may be implied by 0.0288 **M1** may be implied by e.g. 1440 or 14.4 or 0.0144 or 2880 or 28.8 **M1** may be implied by e.g. 0.02 **and** 28.8 or 3500 **and** (0.02 or 28.8) or 0.000 02 or 350 000 **M1** may be implied by e.g. $\frac{figs35}{figs288}$ or $\frac{3.5\times1000\times100}{2\times60\times60\times24}$ or figs 175
	(b)		It will take less time [than *their* 122 days]	1		accept any correct explanation (see appendix) and select best comment if more than one providing they do not conflict

| 25 | | | 5.73 to 5.74 or 5.7
with correct working | **5** | **M4** for $[r^3 =]$ $\frac{1}{3} \times 12.3^2 \times 15.7 \div \frac{4}{3}\pi$ oe
or for $[r^3 =]$ *their* $791.8 \div \frac{4}{3}\pi$

OR
M3 for $\frac{4}{3}\pi\,r^3 = (\frac{1}{3} \times 12.3^2 \times 15.7)$ oe
or $\frac{4}{3}\pi\,r^3 = $ *their* 791.8

OR
M1 for $\frac{1}{3} \times 12.3^2 \times 15.7$ oe
A1 for 791.7 to 791.8 or 792

<u>Trials</u>
We need value and its result for **M1**
M1 for $\frac{1}{3} \times 12.3^2 \times 15.7$ oe
A1 for 791.7 to 791.8 or 792
M1 for a correct trial
M1 for another correct trial

If **0**, **1** or **2** scored instead award **SC3** for answer 5.73 to 5.74 or 5.7 with no working or insufficient working

If **0** or **1** scored instead award **SC2** for 188.99 to 189.03 with no working or insufficient working

If **0** scored **SC1** for 791.7 to 791.8 or 792 with no working or insufficient working | "correct working" requires at least **M3** or if trials are used **M1 M1 M1**

Notes:
allow 151[.29] or 151.2 or 151.3 for 12.3^2,

for $\frac{1}{3}$ accept 0.33 or better and for $\frac{4}{3}$ accept 1.33 or better and for $\frac{4}{3}\pi$ accept 4.17 to 4.19

their 791.8 is 791.7 to 791.8 or 792
from correct use of given formula

M3 implied by $V = \frac{4}{3}\pi\,r^3$ and $V =$ *their* 791.8
do not lose **M1 A1** if further work on a sphere does not include this |

APPENDIX

Exemplar responses for Q4

Response	Mark
73 × 8 No 8 boxes hold 584 pencils	**2**
No 8 boxes hold 584 pencils	**SC1**
73 × 8 No Jamie needs an extra box for the other 6 pencils	**2**
There are 6 remaining pencils	**SC1**
590 ÷ 73 = 8.08 you can't have a fraction of a box *(doesn't say whether Jamie is correct)*	**M1**
Jamie is incorrect 8 boxes will only hold 584 pencils	**SC1**
Jamie is correct 590 ÷ 73 = 8	**M1**
No, they need an extra box	**0**

Exemplar responses for Q5

Response	Mark
Bars are not the same thickness/width	**1**
It has to be 3 or 6 lines wide not both	**1**
June and August have 3 boxes /squares, July has 6 *(implies width)*	**1**
July is wider	**1**
Scale should start at 0 not 5	**1**
Scale is not linear	**1**
Difference in frequency is not equal/ consistent	**1**
Scale goes up in 5s then in 10s	**1**
Scale is inconsistent	**1**
Bars are different lengths without reference to numbers or x axis	**0**
Bars are different sizes *(no reference to width)*	**0**
July is not the same as the others *(no reference to width or equivalent)*	**0**
July is taking 6 columns *(no reference to others)*	**0**
July has more boxes/ squares *(no reference to width)*	**0**
Frequency axis is labelled wrong	**0**
Its not spread evenly *(what isn't)*	**0**

Exemplar responses for 21e

Response	Mark
It is too far away from the last piece of data	**1**
the recordings haven't been taken since 1580m it would need another recording after 1800 to average	**1**
the last temperature recorded near 1800 is 1580	**1**
there isn't a temperature for 1700 so it suggests the experiment **ended at 1580**	**1**
it could be **below 0**	**1**
in the scatter diagram it doesn't go over 1600 m	**1**
the data does not go up to that height	**1**
you do not have measurements for surrounding heights	**1**
graph only goes up to 1580	**1**
answer would be **negative**	**1**
the reading goes **off the graph**	**1**
extrapolation goes beyond known data/1580	**1**
the line of best fit would be off the graph	**1**
no values for temperatures under zero	**1**
the LOBF does not reach there	**0**
answer is not on the scale	**0**
the pattern may change when the temperature goes below zero	**0**
there isn't a temperature for 1700 so it suggests that's where the experiment ended	**0**
there is no information/data at that point	**0**
because it's the last height and where the graph stops	**0**
its an estimate	**0**
there is no data	**0**
no points plotted at 1800	**0**
there are no results of temperature for this given height 1800	**0**
extrapolation (alone)	**0**
there isn't enough evidence	**0**
there are no calculations on that day	**0**
there is no more temperature decrease after 1580	**0**

Exemplar responses for Q24b

Response	Mark
it will take less time [than *their* 122 days]	**1**
my answer to part (a) will decrease	**1**
it will take longer on some parts and less time on other parts	**0**
it will increase	**0**
it will change the time	**0**
it will not affect my answer	**0**
it will take 4 days not 5 days (incorrect statement)	**0**
it make it faster to dig the tunnel	**0**

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