OCR
Oxford Cambridge and RSA

Foundation

GCSE

Mathematics - Paper 1

J560/01: Paper 1 (Foundation tier)

General Certificate of Secondary Education

Mark Scheme for June 2023

OCR (Oxford Cambridge and RSA) is a leading UK awarding body, providing a wide range of qualifications to meet the needs of candidates of all ages and abilities. OCR qualifications include AS/A Levels, Diplomas, GCSEs, Cambridge Nationals, Cambridge Technicals, Functional Skills, Key Skills, Entry Level qualifications, NVQs and vocational qualifications in areas such as IT, business, languages, teaching/training, administration and secretarial skills.

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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 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.

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 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.

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)		8, 26 or 114	1		If more than one number all must be correct
	(b)		49	1		
	(c)		19	1		Do not accept 19 and 3
2			[5] 7 11 19	3	Conditions: (i) range of 14 (ii) median of 9 (iii) four different prime numbers ≥ 5 **B2** for numbers meeting two conditions or **B1** for numbers meeting one condition	Ignore the order of the numbers Examples:e.g. [5], 7, 11, 19 B3 (i), (ii), (iii) [5], 7, 13, 19 B2 (i), (iii) [5], 7, 11, 13 B2 (ii), (iii) [5], 5, 13, 19 B2 (i), (ii) [5], 9, 9, 19 B2 (i), (ii) [5], 9, 19 B2 (i), (ii) [5], 3, 13, 17 B2 (i), (ii) [5], 19 B1 (i) [5], 9, 9 B1 (ii) [5], 13 B1 (ii) [5], 7, 13, 17 B1 (iii) Accept negatives, decimals, fractions
3	(a)		33	1		Ignore extras 33, 40, 47 even if incorrect
	(b)		Add 7	1	May be seen on diagram with no contradiction on answer line	Needs quantity and direction See appendices

Question			Answer	Marks	Part marks and guidance	
4	(a)		B	1		Condone $\frac{1}{6}$
	(b)		A	1		Condone 0 or $\frac{0}{6}$
	(c)		E	1		Condone $\frac{4}{6}$ or $\frac{2}{3}$
5	(a)		$\frac{17}{100}$ oe must be a fraction	1		Must be an integer fraction
	(b)		4	1		
	(c)		[0].875	1		Allow rounded or truncated answer if 0.875 seen
6	(a)		20 final answer	2	**M1** for 87 – 7 implied by 80 or their (87 – 7) ÷ 4 or 20 x 4 = 80 + 7 = 87 oe	
	(b)		y = 4x + 7 final answer	2	**M1** for final answer 4x + 7 or y = 4x – 7 or y = kx + 7 (k ≠ 0) or y = 4x + c where c > 0 final answer or x = 4y + 7 If **0** scored **SC1** for $x = \frac{y-7}{4}$ final answer	Accept throughout y on right e.g. 4x +7 = y Accept throughout x x 4 or x 4 or x x k but not x^4 Accept y = 4(x + c) where c > 0 4x + 7y scores 0 x = 4x +7 scores 0 Do not accept arrows e.g. 4 → xx → 7 →y

Question			Answer	Marks	Part marks and guidance	
7	(a)	(i)	243	1		
	(a)	(ii)	14	1		
	(b)		3 or y = 3 final answer	2	**M1** for 384 ÷ 6 may be implied by 64 or 4^3 or $384 = 6 \times 4^3$	
	(c)		$\frac{1}{3}$ oe fraction	1		
8			3.2[0]	2	**M1** for $\frac{1.44}{450} \times 1000$ oe	Breakdown/ build up methods must get to 1kg exactly
9			43 final answer	4	**B3** for 43.2 OR **M1** for 120 x 180 implied by 21600 **M1** for their 120 x 180 ÷ 10000 may be implied by 2.16 or 2 hectares and 1600 or 20 000 and 1600 **M1** for their 2.16 × 20 If **0** scored instead award **SC1** for answer 40	Allow alternate methods e.g. **M1** for 120 x 180 implied by 21600 **M1** $\frac{10000}{20}$ =500 **M1** for their $\frac{21600}{500}$ Their 2.16 must come from multiplication to find area

Question			Answer	Marks	Part marks and guidance	
10	(a)		He has added 4	1		Do not allow contradictions See appendices
	(b)		He has used 29 as the initial velocity	1	Accept u and v if clear v = 29 not u =29	See appendices
11	(a)		4	1		
	(b)		90	1		
	(c)		No, they need 566 to 567 [g] with correct working or No they need 46 to 47 [g] more with correct working OR No, they can only make 73[.4...] with correct working OR No, they need 7.08[3..] [g] but they only have 6.5 [g] oe with correct working	3	**M2** for their (80 ÷ 24) × 170 oe or **M1** for 80 ÷ 24 or 3.3… or implied by repeated addition reaching 72 or 170 ÷ 24 or 7.08[3..] or implied by repeated addition reaching 168 OR **M2** for their (520 ÷ 170) × 24 oe or **M1** for 520 ÷ 170 implied by repeated addition reaching 510 or repeated subtraction reaching 10 and 3 OR **M1** for 520 ÷ 80 or 6.5 **M1** for 170 ÷ 24 or 7.08[3..] or implied by repeated addition reaching 168	 Implied by 170 × 3 = 510 and 3 × 24 = 72 Implied by 170 × 3 = 510 Implied by repeated addition reaching 480 or repeated subtraction reaching 40 and 6

Question			Answer	Marks	Part marks and guidance	
	(d)		21.6[0]	**3**	**M2** for their (100 ÷ 6) × 1.35 or **M1** for 100 ÷ 6 may be implied by 16[.6…], 16.7, 17 or $16\frac{2}{3}$	Other answers without working score 0
12			148	**3**	**M2** for [2](4×5 + 4×6 + 5×6) or **M1** for (4×5) or (4×6) or (5×6) may be implied by 20, 24, 30	Implied by 74 Any attempt at volume scores 0
13	**(a)**		307.5	**2**	**M1** for 2460 ÷ 8	2460/480 must have × 60 to compare to original M1
	(b)		He can maintain the same average speed Same weather/track conditions No hills He doesn't get tired	**1**		See appendices
14			Open circle above –2 Arrow pointing right	**1** **1**		For 2 marks, arrow may be of any length but must start at –2, mark intent For the arrow accept a line starting at –2 and reaching 3

Question			Answer	Marks	Part marks and guidance	
15			0.25 × 72 oe may be implied by 18	1		Do not award 4 marks unless fully correct
			72 ÷ 6 oe may be implied by 12	1		Note $\frac{5}{12}$ with no working scores 0 as it may come from 1 – $\frac{7}{12}$
			72 – their (18 + 12) or 18 + 12 + 42 = 72	1		If start with $\frac{7}{12}$ = 42 must show 18 + 12 = 30
			$\frac{42}{72} = \frac{7}{12}$ or $\frac{7}{12} \times 72 = 42$ oe Accept 42 is $\frac{7}{12}$ of 72	1		Accept equivalent alternative methods e.g. 1 for $\frac{(18+12)}{72} = \frac{5}{12}$ and 1 for $1 - \frac{5}{12} = \frac{7}{12}$
			Alternative method		Alternative method	
			[25% =] $\frac{1}{4}$ oe	1	$\frac{1}{6}$ = 0.1666 to 0.167	Accept equivalent percentages to the same accuracy
			$\frac{1}{4} + \frac{1}{6}$	1	0.25 + 0.1666 to 0.167	
			1 – their ($\frac{1}{4} + \frac{1}{6}$) oe	1	1 – their (0.25 + 0.1666 to 0.17)	Penalise 0.17 on the second but not the third mark
			$\frac{7}{12}$ from use of common denominator	1	0.583[3] = $\frac{7}{12}$	

Question			Answer	Marks	Part marks and guidance	
16			7x + 3 final answer	4	**M2** for 21x + 9 isw or **M1** for 5x +4 + x +2 + 9x – 5 + 6x + 8 **M1** for their (21x + 9) ÷ 3	 Must be an algebraic expression in the form ax + b b ≠ 0
17			$3x^2 + 7xy + 2y^2$ final answer	3	**M2** for three correct terms from $3x^2 + 6xy + [1]xy + 2y^2$ or **M1** for two correct terms in the expansion above	More than 4 terms mark the worst 4 Accept values in a grid 7xy is 2 terms Do not accept for M2 or M1 3x2y, 3xx, 2yy, 1x1y unless processed further
18	(a)		Triangle **A** at (-5, 4) (-3, 4) (-4, 6)	2	**B1** for translation of $\begin{pmatrix}-6\\j\end{pmatrix}$ or $\begin{pmatrix}k\\3\end{pmatrix}$ or for triangle at (7, -2) (9, -2) (8, 0)	See overlay. In all parts condone unlabelled if clear. Accept good freehand. Vertices within 2mm by eye Blue overlay 2 Red overlay B1 Vertical line shows where bottom left vertex should be for $\begin{pmatrix}-6\\j\end{pmatrix}$ Horizontal line shows where base line of triangle should be for $\begin{pmatrix}k\\3\end{pmatrix}$
	(b)		Triangle **B** at (-3, 2) (-1,1) (-1, 3)	2	**B1** for 90° clockwise rotation or correct size and orientation incorrect position	Blue overlay 2 Red overlay shows B1 for clockwise rotation
	(c)		Triangle **C** at (1, -3) (3, -3) (2, -5)	2	**B1** for reflection in x = –1	Blue overlay 2 Red overlay B1

Question			Answer	Marks	Part marks and guidance	
19			7.57	2	**B1** for 7.56[8…] or $\frac{2\sqrt{358}}{5}$ or 7.570 If **0** scored **SC1** for their positive answer to more than 3 figures correctly rounded to 3 s.f.	Must see unrounded value
20			22.7[2…] or 22.73 or 23 or $\frac{250}{11}$	3	**M2** for $(1 - \frac{1.02}{1.32})$ [× 100] oe or $\frac{1.32-1.02}{1.32}$ [× 100] oe or $\frac{1.02-1.32}{1.32}$ [× 100] oe or **M1** for $\frac{1.02}{1.32}$ [× 100] oe e.g. $\frac{17}{22}$	condone −22.7[2…] or −22.73 or −23 for **3** marks **M2** implied by 0.227[2…] or 0.2273 or 0.23 or $\frac{5}{22}$ **M1** implied by 0.7727…, 0.77[3], 77.27, 77[.3] or 2270, 2272, 2273, 2300 Accept fully correct non-calculator methods

Question			Answer	Marks	Part marks and guidance	
21			1520 or 3 20 pm	**4**	**B3** for 3.20 or 1520 pm or **B2** for listing the next 3 correct times of both trams i.e. 10.20, 11.10, 12.[00] and 10.05, 10.40,11.15 or **B1** for listing the next 3 correct times of one tram i.e. 10.20, 11.10, 12.[00] or 10.05, 10.40,11.15 OR **B3** for 5 [h] 50 or **B2** for [LCM =] 350 or **B1** for listing the next 3 multiples of 50 or 35 i.e, 100, 150, 200 or 70, 105, 140 or 1[h] 40 2[h] 30 3[h]20 or 1[h]10 1[h]45 2[h]20 or **M1** for [50 =] 2 × 5 × 5 and [35 =] 5 × 7 allow in a factor tree or tables etc or [LCM =] 350k or 2 × 5× 5 × 7	Mark only 1 method Condone 0320, 3.20 am 1520am for 3 marks but do not accept 15 h 20 or 3 h 20 Condone 10.5 if followed by 1040 May be indicated by circling in a list must be identified Condone 1 in factor trees

Question			Answer	Marks	Part marks and guidance	
22	(a)		Straight line Passes through origin	1 1		See appendices
	(b)		Straight line intercepting positive y-axis Their line drawn parallel to given line	1 1		Gradient ≠ 0 Min length 4cm
23	(a)		960	2	**M1** for $\frac{720}{3}$ [× 4] may be implied by 240 nfww	
	(b)		16	3	accept any correct method **M2** for e.g. their (3 + 5) × 2 oe or $\frac{2}{3}${3 × (3 + 5)} oe or [c=] 3(3 + 5) – (3 + 5) or **M1** for e.g. $\frac{c}{3+5+c} = \frac{2}{3}$ oe or 3 × c = 2(3 + 5 + c) or $c = \frac{2}{3}(3 + 5 + c)$ oe or 3 + 5 = $\frac{1}{2}$c or $\frac{1}{3}$ linked with 3 + 5	trials : **M1** for each correct trial to a max of **M2,** we need to see the value c tried and the appropriate fraction
24	(a)		0.6 oe 0.2, 0.8, 0.2, 0.8 oe	1 1		
	(b)		[0]. 32 oe	2	Correct or ft their 0.8 **M1** for 0.4 × their 0.8	Their 0.8 <1

Question			Answer	Marks	Part marks and guidance	
25			[f =] 7 [n =] 15	4	**B1** for [f =] 7 AND **B3** for [n =] 15 or **M2** for 50 × 5.5 – (1 × 12 + 3 × 2 + 5 × 9 + 6 × 16 + 8 × their 7) [÷ 4] or better or forming an equation and attempting to solve it correctly e.g. (1 x 12) + (3 x 2) + (5 x 9) + (6 x 16) + (8 x their f) +(n x 4) = 5.5 x 50 or better or **M1** for 50 × 5.5 or 275 or 1 × 12 + 3 × 2 + 5 × 9 + 6 × 16 + 8 × their 7 or 215	Note : if f is an error **FT** their f for the **M** marks **M2** implied by 60 or 275 – their 215 better = 12 + 6 + 45 + 96 + their 56 Common error is 1 + 3 + 5 + 6 + 8 = 23 5.5 × 6 = 33 and 33 – 23 =10 scores **M0**
26	(a)		Two accurate curves	3	**B2** for 7 or 8 points plotted accurately or **B1** for 5 or 6 points plotted accurately	Ignore the curve beyond points but the curve must not cross or touch the y-axis tolerance ± $\frac{1}{2}$ small square from correct points radially no excessive feathering, no ruled lines, no excessive 'tram lines' overlay gives guidance only

Question			Answer	Marks	Part marks and guidance	
	(b)		A correct and accurate reading from their graph	**1FT DEP.**	**Dep.** on a graph in **(a)** with at least one positive solution and strict **FT** their curve.	If curve crosses x-axis between two grid lines accept either grid line value as correct answer If their curve has more than one positive solution accept any of their correct solutions Do not accept answers to more than 1d.p., $\sqrt{3}$ or answers clearly rounded from this. Condone whole numbers where appropriate e.g. 2 for 2.0 Do not accept 0 as positive.

27			5.36 to 5.4 and correct working	**6**	**B5** for the correct answer in the wrong format with correct working e.g. 0.0536 OR **M5** for $\frac{12^2-\pi\times6^2}{12^2\times4}$ [× 100] oe OR <u>Square</u> **M1** for 12^2 or 144 or 6^2 or 36 (must be consistent with $\frac{1}{4}\times\pi\times6^2$) and <u>Circle</u> **M2** for $\pi\times6^2$ or $\frac{1}{4}\times\pi\times6^2$ or **M1** for radius of 6 may be implied e.g. 2×π×6 (with π) and **M1** for (their 12^2 – their ($\pi\times6^2$)) [÷4] or their ($\pi\times6^2$) ÷ their 12^2 or their (6^2− their ($\frac{1}{4}\times\pi\times6^2$)) [÷their 12^2] or their ($\frac{1}{4}\times\pi\times6^2$) ÷ $\frac{their12^2}{4}$ If **0** or **M1** or **M2** scored, instead award **SC3** for answer 5.36 to 5.4 with no or insufficient working If **0** or **M1** scored, instead award **SC2** for 30.88 to 31 or 7.72 to 7.75 or 0.785 to 0.786 with no or insufficient working	"Correct working" requires evidence of at least **M1** AND **M2** AND **M1** . their 144 must come from attempt at area of a square **M2** implied by 113.04 to 113.12 or 28.26 to 28.28 6 [cm] could be on diagram **FT** their incorrect 6 identified as radius implied by 30.88 to 31 or 7.72 to 7.75 implied by 0.785 to 0.786 implied by 7.72 to 7.75 implied by 0.785 or 0.7852 to 0.7856 their area of the circle has to be an attempt at πr^2 not $2\pi r$ so that, if they do not, the most they can be awarded is **M1** for 144 and **M1** for radius = 6 cm

APPENDIX

Exemplar responses for 3b

Response	Mark
+7 in the answer space	**1**
Add 7	**1**
Up 7	**1**
+7 on diagram, answer space blank	**1**
$7 \times 5 - 2$ refers to the 5^{th} term	**1**
7n – 2 alone not an explanation	**0**
Gap of 7 quantity but no direction	**0**
Took 12 from 5 to work out the difference and then added it onto 26	**0**
+7 on diagram, answer in answer space mark answer line	**See answer line**

Exemplar responses for 10a

Response	Mark
Added 4	**1**
The error Finley has made is he has added 4 whereas he needed to do the opposite	**1**
He moved the equation to the other side 5x = 19 + 4 he should have taken 4 off 19	**1**
5x = 19 + 4	**1**
He has added 19+4 instead of taking 4 off 19	**1**
5x isn't equal to 19+4, 5x plus 4 is equal to 19 first part is correct, second part is irrelevant not a contradiction	**1**
Finley hasn't worked out the right way as he has added 4 onto the 19	**1**
It should be 5x = 19 – 4	**1**
On the 2^{nd} part where it says 5x=19+4 is wrong he shouldn't have added 4 to 19	**1**
He should have subtracted 4 from 19	**1 bod**
Finley did not subtract 4	**0**
5x = 19 – 4 5x = 15 x = 3 with no further explanation	**0**
He should have subtracted 4	**0**
You need to do the same to both sides	**0**
Finley got the answer wrong because it is x = 3 need to see a reason	**0**
He's added 4 on to 19 when it's supposed to equal 19	**0**
He wasn't supposed to add them do they mean 5x+4 or 19+4	**0**

Exemplar responses for 10b

Response	Mark
v = 29 not u	**1**
He put 29 in the place of the u and not the v. Its meant to be 29 = u + (5x3) not v=29+(5x3)	**1**
Initial velocity not 29	**1**
v not initial velocity	**1**
He didn't substitute properly he put 29m/s for initial velocity	**1**
He has written the final velocity down in the equation in the wrong place which therefore makes his calculation wrong	**1 bod**
He has used the 29m/s when that is the velocity, he was using the wrong numbers	**0**
He substituted the formula wrong not enough	**0**
It should equal 29 not v 'it' isn't enough	**0**

Exemplar responses for 13b

Response	Mark
Will not get tired	**1**
She can continue to run 307.5m per minute	**1**
He can run 3690 more in 12 minutes.	**1**
That her speed stays the same the whole time	**1**
His stamina will stay the same	**1**
He won't stop for a break	**1**
The weather conditions will be the same	**1**
He can run 2.5 x the distance in 2.5 x the time	**1**
He might be wrong because his breathing might go and collapse before he can make it	**1**
She won't run out of energy	**1**
He assumed that he can run for longer distances than he has	**1 bod**
They would be going one constant speed no stops	**1 bod**
That his speed is constant	**1 bod**
That she can run further in longer time	**0**
She's right in calculation but she can't run with speed equal to 307.5m/min	**0**
That because he did 2460 in 8 minutes he can just triple it and do more	**0**

The timing is wrong nobody can do 6150 in 20 minutes	**0**
He won't be able to maintain his speed the whole way	**0**
She thinks she can do a longer run quicker than she can do a shorter run	**0**
If he doubles the length his time will automatically double	**0**
that he can run 6150 in 20 minutes/ run that far in 20 minutes	**0**
He can run 307.5m per minute	**0**

Exemplar responses for 22a

Response	**Mark**
It is a straight line through origin equal away from both total and hours worked	**1 1**
Straight line starting at the origin	**1 1**
Because there is a positive correlation and going up in a straight line	**1 0**
The charge is going up at a constant rate	**1 0**
It is a straight diagonal line	**1 0**
It increases at the same rate'	**1 Bod 0**
It starts at 0	**0 1**
Goes up at a steady incline	**0 0**
Because it is a positive gradient	**0 0**
As it goes straight through the middle - positive middle of what?	**0 0**
As the hours increase so does the price	**0 0**
Line straight across across implies horizontal line	**0 0**
The more hours he works the more money he gets	**0 0**

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