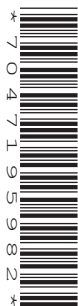# OCR
Oxford Cambridge and RSA

H

GCSE (9–1) Mathematics
J560/04 Paper 4 (Higher Tier)

Thursday 24 May 2018 – Morning
Time allowed: 1 hour 30 minutes

You may use:
• a scientific or graphical calculator
• geometrical instruments
• tracing paper

First name	
Last name	

Centre number					Candidate number				

INSTRUCTIONS
• Use black ink. You may use an HB pencil for graphs and diagrams.
• Complete the boxes above with your name, centre number and candidate number.
• Answer **all** the questions.
• Read each question carefully before you start to write your answer.
• Where appropriate, your answers should be supported with working. Marks may be given for a correct method even if the answer is incorrect.
• Write your answer to each question in the space provided. Additional paper may be used if required but you must clearly show your candidate number, centre number and question number(s).
• Do **not** write in the barcodes.

INFORMATION
• The total mark for this paper is **100**.
• The marks for each question are shown in brackets **[ ]**.
• Use the π button on your calculator or take π to be 3.142 unless the question says otherwise.
• This document consists of **20** pages.

Turn over

Answer **all** the questions.

1 **(a)** The ratio 2 centimetres to 5 metres can be written in the form 1 : n.

Find the value of n.

(a) n = ... **[2]**

(b) Jay, Sheila and Harry share £7200 in the ratio 1 : 2 : 5.

How much does Harry receive?

(b) £ .... **[2]**

2 Given that $y^{18} \div y^6 = y^k$, find the value of k.

k = ... **[1]**

3 **(a)** **(i)** Write 120 as a product of its prime factors.

(a)(i) .... **[3]**

(ii) The lowest common multiple (LCM) of x and 120 is 360.

Find the smallest possible value of x.

(ii) .... **[2]**

(b) Two numbers, A and B, are written as a product of prime factors.

$$A = 2^4 \times 3^2 \times 7^2 \qquad B = 2^3 \times 3 \times 5 \times 7$$

Find the highest common factor (HCF) of A and B.

(b) .... **[2]**

4 Lee wishes to find out if there is a relationship between a person's age and the time it takes them to complete a puzzle.

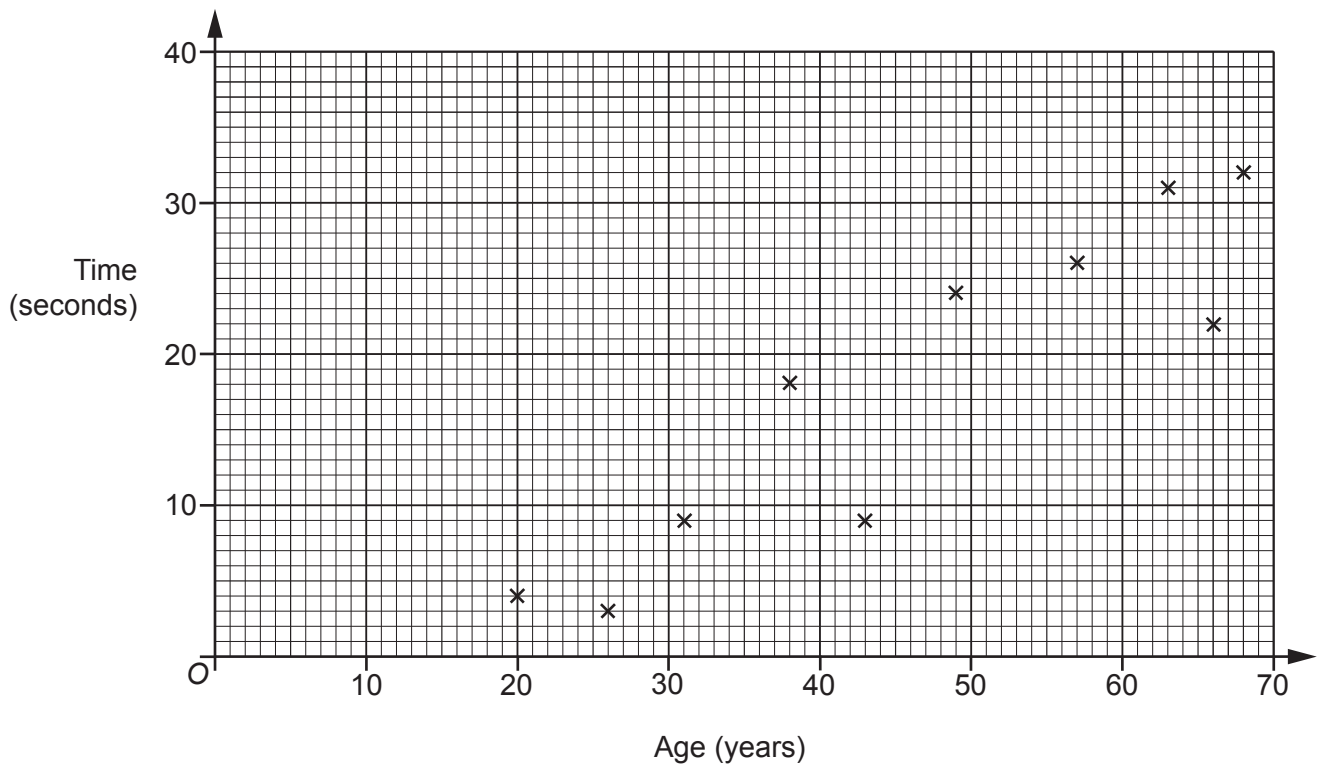Lee decides to conduct an experiment.
She asks 12 people to complete the puzzle.
She records each person's age and the time taken to complete the puzzle.

(a) Make one criticism of Lee's method.

....

.... **[1]**

(b) This scatter diagram shows the results for ten of the people in Lee's experiment.

Here are the other two results.

Age (years)	47	60
Time (seconds)	21	34

Plot these results on the scatter diagram. **[2]**

(c) What type of correlation is shown in the scatter diagram?

(c) .... **[1]**

(d) Estimate the time it would take a person aged 35 to complete the puzzle.

Show your working to justify your answer.

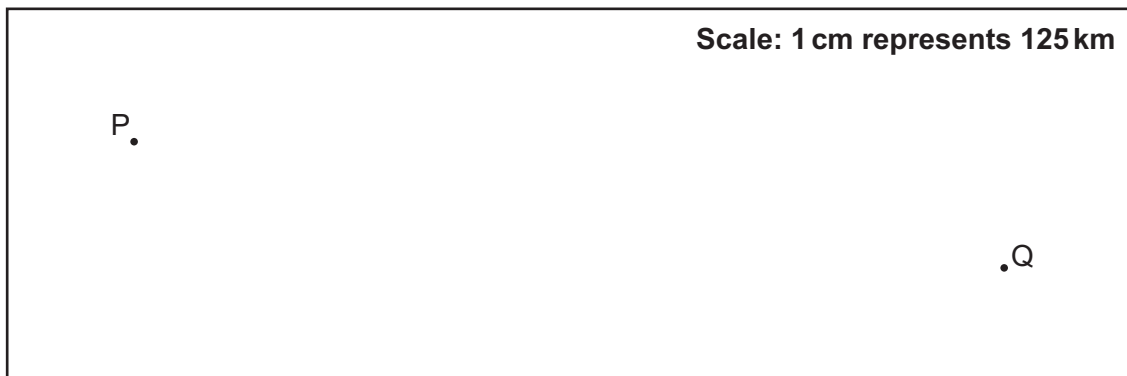**(d)** .... **[2]**

(e) Lee says that at least 80% of the 12 people completed the puzzle in under 30 seconds.

Is Lee correct?
Show working to support your answer.

.... **[3]**

5   The scale diagram below shows two cities, P and Q.

Scale: 1 cm represents 125 km

P.

.Q

A plane departs from P at 09 47 and arrives at Q at 12 07.

(a)   Work out the average speed, in kilometres per hour, of the plane.

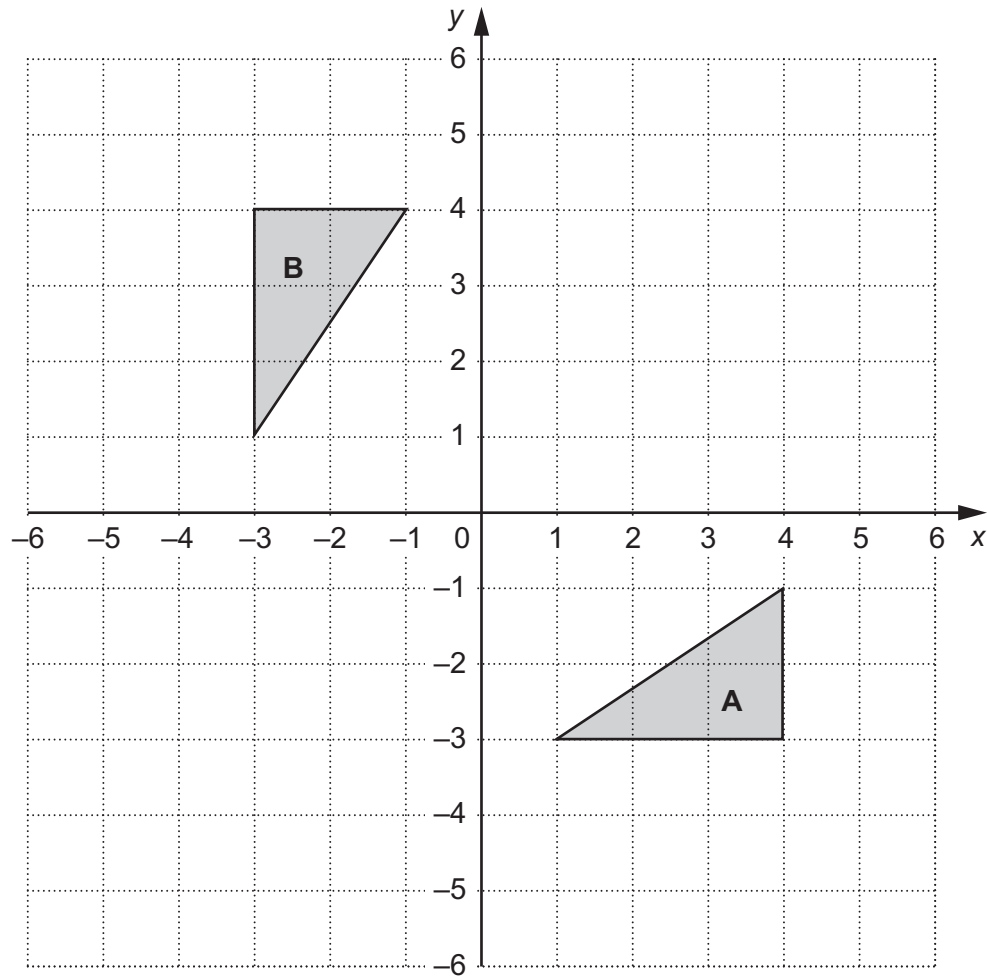**(a)**   .... km/h **[5]**

(b)   Give one reason why your answer may be inaccurate.

    ....

    .... **[1]**

6 Triangles **A** and **B** are drawn on a coordinate grid.

(a) Describe fully the **single** transformation that maps triangle **A** onto triangle **B**.

....

.... **[2]**

(b) Triangle **A** can also be mapped onto triangle **B** using a combination of two transformations:

- a transformation T, followed by
- a reflection in the line $x = 0$.

Describe fully transformation T.

....

.... **[4]**

Turn over

7 The scale diagram below shows towns, A, B and C.
Line AB represents the road from A to B and line AC represents the road from A to C.

A shopping centre is to be built so that it is

- nearer to the road from A to B than the road from A to C,
- less than 14 km from town C.

(a) Using construction, shade the region where the shopping centre could be built.
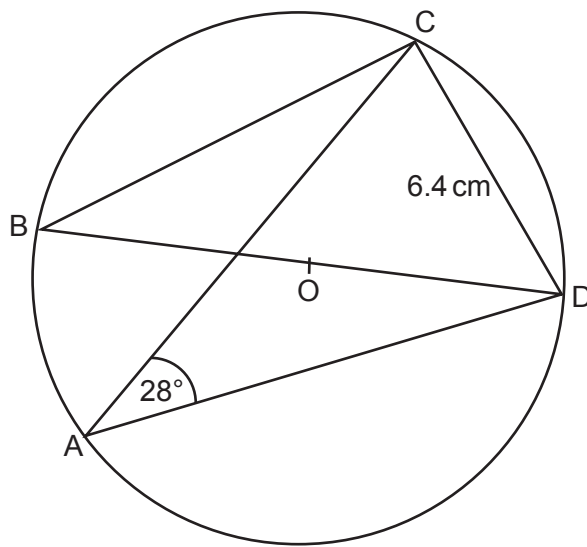Show all your construction lines.

Scale: 1 cm represents 2 km

B

A

C
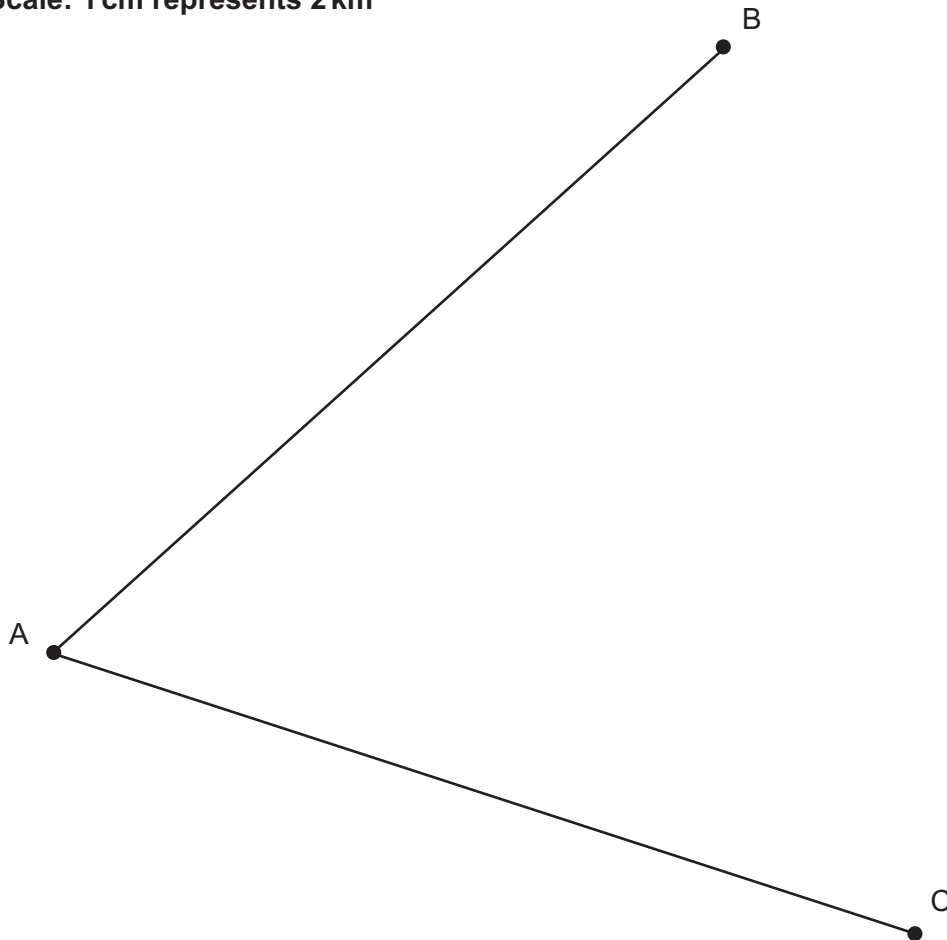
[5]

(b) Explain why the region found in part **(a)** may not be an appropriate site for the shopping centre.

....

.... **[1]**

8 A, B, C and D are points on the circumference of a circle, centre O.

Not to scale

Angle CAD = 28° and CD = 6.4 cm.
BD is a diameter of the circle.

Calculate the area of the circle.

.... cm^2 **[5]**

Turn over

9 The dimensions, in centimetres, of this rectangle are shown as algebraic expressions.

$5x - y - 8$

Not to scale

$3x + y - 4$

$2x - 6y - 3$

$3x + 5y + 4$
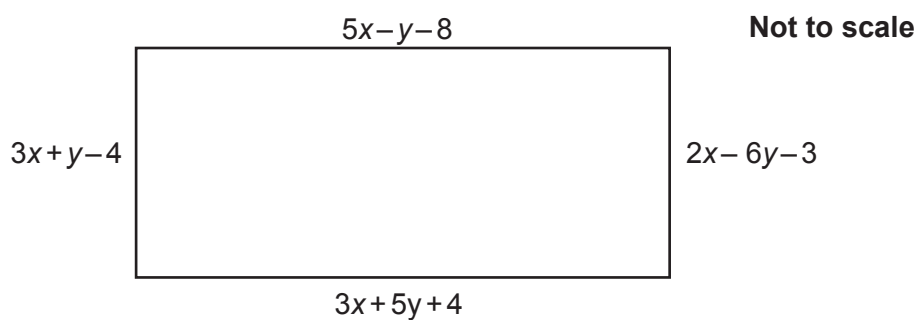
Work out the length and width of the rectangle.

length = ... cm

width = ... cm

[6]

10 60% of the people in a town are males.
20% of the males are left-handed.
21.6% of all the people are left-handed.

Work out the percentage of the people who are not male who are left-handed.

.... % **[5]**

Turn over

11 y is directly proportional to the square of x.

Find the percentage increase in y when x is increased by 15%.

.... % **[4]**

12   The value of a car, £V, is given by

$$V = 16\,500 \times 0.82^n$$

where n is the number of years after it is bought from new.

(a) Write down the value of the car when new.

(a)   £ .... **[1]**

(b) Write down the annual percentage decrease in the value of the car.

(b)   .... % **[1]**

(c) Show that the value of the car after 4 years is less than half its value when new.   **[2]**

13 A menu has

- 6 starters
- 10 main dishes
- 7 desserts.

(a) A three-course meal consists of a starter, a main dish and a dessert.

How many different three-course meals are possible?

(a) .... **[2]**

(b) A two-course meal consists either of a starter with a main dish, a starter with a dessert or a main dish with a dessert.

Show that there are 172 possible different two-course meals. **[3]**

Turn over

14 The Venn diagram shows the number of students studying Mathematics (M) and the number of students studying Physics (P) in a college.
35 students do not study either subject.

$\mathcal{E}$

M   41 x 18   P

35
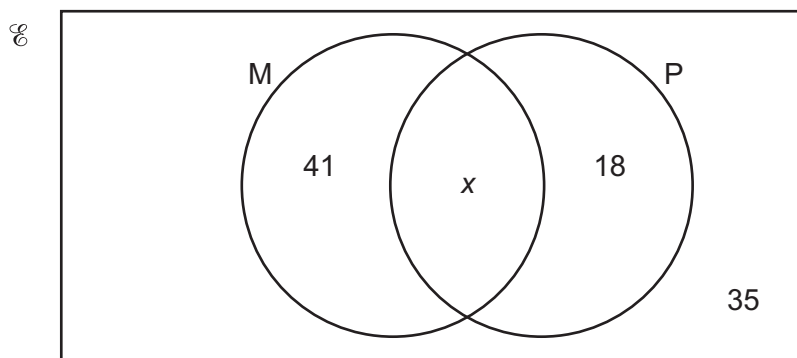
(a) The total number of students is 121.

Find the value of x.

(a) $x =$ .... **[1]**

(b) One of the 121 students is selected at random.

Find the probability that this student studies Mathematics, given that they study Physics.

(b) .... **[2]**

15 (a) Write $x^2 - 8x + 25$ in the form $(x - a)^2 + b$.

(a) .... **[3]**

(b) Write down the coordinates of the turning point of the graph of $y = x^2 - 8x + 25$.

(b) (......................... , ...) **[2]**

(c) Hence describe the single transformation which maps the graph of $y = x^2$ onto the graph of $y = x^2 - 8x + 25$.

....

....

.... **[2]**

Turn over

16 Solve by factorisation.

$$3x^2 + 11x - 20 = 0$$

$x =$ .... or $x =$ .... **[3]**

17 For each graph below, select its possible equation from this list.

$$y = \frac{1}{x} \qquad y = \cos x \qquad y = x^2 \qquad y = \left(\frac{1}{2}\right)^x \qquad y = 2^x$$

$$y = \sin x \qquad y = 2^{-x} \qquad y = \tan x \qquad y = x^3 \qquad y = \frac{1}{x^2}$$

(a)

(a) $y =$ ....

(b)

(b) $y =$ ....

(c)

(c) $y =$ ....

[3]
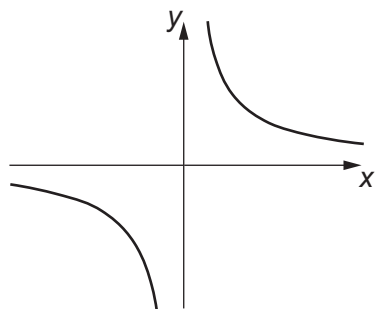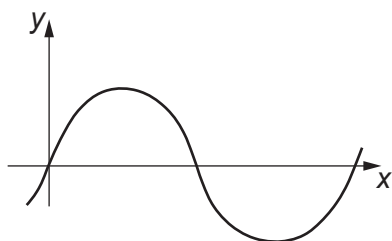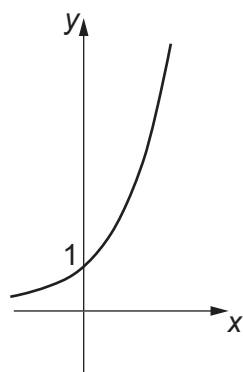
18 Calculate the area of this triangle.

Not to scale

5.8 cm

3.9 cm

6.4 cm
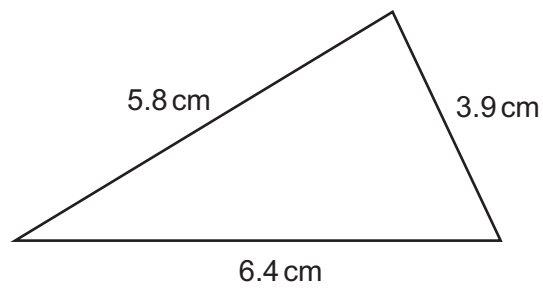
.... cm² **[6]**

19 Here are the first four terms of a quadratic sequence.

$$0 \qquad 9 \qquad 22 \qquad 39$$

The nth term can be written as $an^2 + bn + c$.

Find the values of a, b and c.

$a =$ ....

$b =$ ....

$c =$ ....

[4]

Turn over

20 Solve this equation, giving your answers correct to 1 decimal place.

$$\frac{5}{x+2} + \frac{3}{x-3} = 2$$

x = ... or *x* = ... **[6]**

END OF QUESTION PAPER

GCSE

Mathematics (9-1)

Unit **J560/04:** Paper 4 (Higher Tier)

General Certificate of Secondary Education

Mark Scheme for June 2018

Annotations used in the detailed Mark Scheme.

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

These should be used whenever appropriate during your marking.

The **M**, **A, B** etc annotations must be used on your standardisation scripts for responses that are not awarded either 0 or full marks.
It is vital that you annotate these scripts to show how the marks have been awarded.
It is not mandatory to use annotations for any other marking, though you may wish to use them in some circumstances.

Subject-Specific Marking Instructions

1   **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.

2   Unless the answer and marks columns of the mark scheme specify **M** and **A** marks etc, or the mark scheme is 'banded', then if the correct answer is clearly given and is <u>not from wrong working</u> **full marks** should be awarded.

       Do <u>not</u> award the marks if the answer was obtained from an incorrect method, ie incorrect working is seen <u>and</u> the correct answer clearly follows from it.

3   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.

Figures or expressions that are being followed through are sometimes encompassed by single quotation marks after the word *their* for clarity, eg FT 180 × (*their* '37' + 16), or FT 300 – √(*their* '5^2 + 7^2'). Answers to part questions which are being followed through are indicated by eg FT 3 × *their* (a).

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.

4   Where dependent (**dep**) marks are indicated in the mark scheme, you must check that the candidate has met all the criteria specified for the mark to be awarded.

5   The following abbreviations are commonly found in GCSE Mathematics mark schemes.

-    **cao** means **correct answer only**.
-    **figs 237**, for example, means any answer with only these digits. You should ignore leading or trailing zeros and any decimal point eg 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).
-    **nfww** means **not from wrong working**.
-    **oe** means **or equivalent**.
-    **rot** means **rounded or truncated**.
-    **seen** means that you should award the mark if that number/expression is seen anywhere in the answer space, including the answer line, even if it is not in the method leading to the final answer.
-    **soi** means **seen or implied**.

6   Make no deductions for wrong work after an acceptable answer unless the mark scheme says otherwise, indicated for example by the instruction 'mark final answer'.

7   As a general principle, if two or more methods are offered, mark only the method that leads to the answer on the answer line. If two (or more) answers are offered, mark the poorer (poorest).

8   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.

9   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.

10   If the correct answer is seen in the body and the answer given in the answer space is a clear transcription error allow full marks unless the mark scheme says 'mark final answer' or 'cao'. Place the annotation ✓ next to the correct answer.

        If the answer space is blank but the correct answer is seen in the body allow full marks. Place the annotation ✓ next to the correct answer.

        If the correct answer is seen in the working but a completely different answer is seen in the answer space, then accuracy marks for the answer are lost. Method marks would still be awarded. Use the M0, M1, M2 annotations as appropriate and place the annotation ✗ next to the wrong answer.

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

12   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.

13   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.

Question			Answer	Marks	Part marks and guidance	
1	(a)		250	2	**B1** for [2 :] 500 If **0** scored **SC1** for answer of figs 25	Ignore any units seen
	(b)		4500	2	**M1** for $\dfrac{7200}{1+2+5}$ [×5] soi by 900	
2			12	1		not y^{12}
3	(a)	(i)	2 × 2 × 2 × 3 × 5 oe	3	**M2** for 2, 2, 2, 3, 5 which could be on a tree diagram or in a table or for an answer one step away from correct answer e.g. 2 × 2 × 2 × 15 or **M1** for correct complete method with one error or one step from correct method e.g tree or multiple division or **B1** for two of 2, 3 and 5 as factors	So $2^3 \times 3 \times 5$ scores **3** marks and 2^3, 3, 5 scores **M2** see additional guidance
		(ii)	9	2	**B1** for an answer of 18, 36, 45, 72, 90,180 or 360.	
	(b)		168	2	**M1** for 2^3, 3 and 7 selected	condone $2^3 \times 3 \times 7$ for **2** marks even if calculated incorrectly
4	(a)		accept any correct explanation e.g. sample size is small, no mention of subjects being randomly selected	1		If more than one choose the best one see list of exemplars
	(b)		two points accurately plotted	2	**B1** for each	tolerance $\pm\frac{1}{2}$ small square and use overlay as a guide
	(c)		positive	1		ignore any extras e.g. strong

	Question		Answer	Marks	Part marks and guidance	
	(d)		a line or a mark between (35,9) and (35,15)	**1**		use overlay as a guide, a clear indication of method to find their answer
			9 to 15	**1**		
	(e)		9 soi	**B1**		9 can be implied by 75
			For putting *their 9* out of 12 into a percentage oe e.g. 9 in 12 or $\dfrac{9}{12}$ [=] 75[%]	**M1**	Accept any correct reasoning e.g. **M1** for 0.80 × 12 or 9.6	Accept fractions, decimals or percentages providing the two figures can be compared
			A correct conclusion from *their 9* e.g. "No/she is wrong"	**A1FT**	**A1FT** for a correct conclusion from *their 9* e.g. "No/she is wrong" If no points plotted in (b) award **M1** for 8 [out of 10] = 80[%] and **A1** for "Yes"	**FT** *their percentage or figure*
5	**(a)**		610.7 to 632.2	**5**	**B2** for 1425 to 1475 or **B1** for 11.4 to 11.8 or **M1** for *their length* × 125 AND **B1** for $2\frac{1}{3}$, 2[h] 20 or 2.33… or 140 and **M1** for distance ÷ time and **A1FT** ft for a correct answer for *their length*	See additional guidance This calculation must be seen and distance must be *their* measurement or *their* measurement × 125. You must be convinced that it is a time as a divisor.

Question			Answer	Marks	Part marks and guidance	
	(b)		accept any correct reason e.g. it may not have flown in a straight line or it may have been diverted	**1**		If more than one choose the best one. Comment about distance only, see list of exemplars.
6	**(a)**		Reflection $y = x$ oe	**1** **1**		Double transformation scores 0
	(b)		Rotation	**2**		Double transformation scores 0 <u>unless</u> the second one is reflection in $x = 0$ or in the x/y axis.
			[centre] (0,0)	**1**		accept origin and O as centre
			[+]90 or 90 anti-clockwise or −270 or 270 clockwise	**1**	If **0** scored then award **B2** for correct position of the intermediary triangle	use overlay as a guide
7	**(a)**		Accurate angle bisector with 2 pairs of correct arcs	**2**	**B1** for correct bisector with no arcs or incorrect arcs	The bisector does not have to go through A but if extended it must go through A and it must lie within green lines in overlay. For **2** marks condone intersecting arcs of equal radius, one centre B and the other centre C for the construction with bisector drawn.
			Arc centre C radius 7cm	**2**	**B1** for arc centre C with incorrect radius	For arc, measure radius using ruler.
			Correct region indicated	**1Dep**	Dependent on at least **B1** for bisector and **B2** for arc	tolerance ± 2 mm and ± 2° for both constructions

Question			Answer	Marks	Part marks and guidance	
	(b)		accept any correct assumption e.g. Road[s] is not/are not straight, road AB is busier than road AC, land is not suitable for construction	1		If more than one choose the best one see list of exemplars
8			145.2 to 146.2	5	**B1** for angle CBD = 28 soi or for angle BCD = 90 soi and **M2** for $\dfrac{6.4}{\sin 28}$ oe or 13.6[3…] nfww or **M1** for sin [28] = $\dfrac{6.4}{[..]}$ oe and **M1** for π × (*their* radius)^2	**B1** implied by e.g. 28 or 62 correctly used in trigonometry or 28, 62 or 90 (or symbol) marked in the correct place in the diagram 13.6… can imply **B1** however if it is marked on the wrong side,e.g. on AC, then it scores **0** marks

Question	Answer	Marks	Part marks and guidance
9	15 9	**6**	**B5** for [x=] 4.5 or $4\frac{1}{2}$ and [y =] -0.5 or $-\frac{1}{2}$ even given as answers OR **B2** for $5x - y - 8 = 3x + 5y + 4$ or $3x + y - 4 = 2x - 6y - 3$ and **M1dep** for rearranging either equation correctly so that the x's, y's and numbers are combined in <u>one</u> of the equations and **M1dep** for multiplying one equation to equate coefficients of one variable and **M1dep** for the correct method to eliminate a variable If **0** scored **SC1** for equating two adjacent sides e.g. $5x - y - 8 = 2x - 6y - 3$	accept 15 or 9 either way round for **6** marks The next **M1**s are dep on **B2** gained. For **M1** need an equation with one x term, one y term and one number term and allow one numerical error e.g. 2x – 6y = 12 oe or x + 7y – 1 = 0 oe . allow one numerical error e.g. 2x – 6y = 12 and 2x + 14y = 2 allow one numerical error e.g. 20y = –10

Question			Answer	Marks	Part marks and guidance	
10			24	5	accept any correct method e.g. **M1** for 1 – [0].6 soi by [0].4 or 40 **M1** for [0].6 × [0].2 or [0].12 or 12 soi by [0].096(9.6) **M1** for [0].216 – [0].12 or [0].096(9.6) **M1** for *their* [0].096 ÷ [0].4 or [0].24	Working may be in decimals (or %) e.g. table based on 100 : $\begin{array}{lccc} & L & L^1 & \\ M & 12 & 48 & 60 \\ M^1 & 9.6 & 30.4 & 40 \\ & 21.6 & 78.4 & 100 \end{array}$
11			32.25	4	accept any correct method e.g. **B1** for 1.15 **M1** for $y = k(1.15 \times x)^2$ **M1** for $(1.15^2 -1)$ [× 100] or [0].3225 OR **B2** for 1.15^2 or 1.3225 or **B1** for 1.15 **M1** for $(1.15^2 -1)$ [× 100] or [0].3225 If **0** scored award **B1** for $y = kx^2$	accept if *k* replace by a numerical value
12	(a)		16 500	1		
	(b)		18	1		
	(c)		7460 and 8250 oe or [0].452… and [0] .5 oe	2	**M1** for [16 500 ×] .82⁴ or 7460 or [0].452	accept 7460.01 or 7460.009… accept any correct argument for 2 marks e.g. 7460×2 and 16 500 or better

	Question		Answer	Marks	Part marks and guidance	
13	(a)		420	2	**M1** for 6 × 10 × 7	
	(b)		6×10+6 ×7+10×7 or 60+42+70 [=172]	3	**M2** for two correct products shown or **M1** for one correct product shown	
14	(a)		27	1		
	(b)		$\dfrac{27}{45}$ or $\dfrac{3}{5}$ or [0].6 or $\dfrac{their\,(a)}{45}$ oe	2	**B1** for $\dfrac{27}{n}$ or $\dfrac{their\,(a)}{n}$ or $\dfrac{k}{45}$ (*n*, *k* are positive integers and fractions are proper)	Any fraction or percentage equivalent to $\dfrac{27}{45}$ for 2 marks, the fractions must be proper and isw if conversion or cancelling after an acceptable answer
15	(a)		$(x-4)^2 + 9$	3	**B1** for $(x-4)^2$ **B2 FT** for 9	**FT** *their* $(x-4)^2$
	(b)		(4 , 9)	2	**B1FT** for each part	**FT** *their* $(x-4)^2 + 9$
	(c)		Translation $\begin{pmatrix} 4 \\ 9 \end{pmatrix}$	2	**B1** for translation **B1FT** for $\begin{pmatrix} 4 \\ 9 \end{pmatrix}$	award **B1** if it FT from either (a) or (b) and condone e.g. 4 right 9 up
16			$(3x-4)(x+5)$ and $\frac{4}{3}$ oe and ⁻5	3	**B2** for $(3x-4)(x+5)$ or **B1** for two factors giving two correct terms and **B1FT** for two answers correct from *their* factors If **0** scored then **B1** for two correct answers	For $\frac{4}{3}$ accept 1.3̇, 1.33[3…] and $1\frac{1}{3}$

	Question		Answer	Marks	Part marks and guidance	
17	(a)		$y = \dfrac{1}{x}$	1		
	(b)		$y = \sin x$	1		
	(c)		$y = 2^x$	1		
18			11.1 or 11.14 or 11.13[6…] or accept 11 with supporting working.	6	**M3** for correct cos rule with cos as subject e.g. [cos =] $\dfrac{6.4^2 + 5.8^2 - 3.9^2}{2 \times 6.4 \times 5.8}$ or **M2** for the above (M3) formula with one error or for $3.9^2 = 6.4^2 + 5.8^2 - 2 \times 6.4 \times 5.8 \times \cos[.]$ or **M1** for this (M2) formula with one error AND **M2** for $\frac{1}{2}$ ×6.4×5.8×sin(*their*36.87…) or **M1** for the use of this formula with one error	accept any correct method and they can find any angle, see additional guidance for the other angles this angle (opposite 3.9) is 36.87… which implies **M3**
19			[a =] 2 [b =] 3 [c =] -5	4	**B2** for [a =] 2 or **M1** for second differences = 4 and **M1** for revised differences of ⁻2 1 4 7 or **B1** for b or c correct	

Question	Answer	Marks	Part marks and guidance	
20	⁻0.3 5.3	6	**B1** for $(x + 2)(x − 3)$ oe seen	likely seen in $2(x + 2)(x − 3)$ implied by $x^2 − x − 6$
			M1 for $5(x − 3) + 3(x + 2)$ oe or better	implied by $5x − 15 + 3x + 6$ or $8x − 9$
			M1FT for $2x^2 − 10x − 3$ [= 0] or FT *their* correct attempt to form a quadratic equation with at most two errors	$2x^2 − 10x − 3$ [=0] seen scores **3** marks, condone e.g. $2x^2 − 10x = 3$ for **3** marks
			M1FT for $$\frac{-(-10) \pm \sqrt{(-10)^2 - 4 \times 2 \times -3}}{2 \times 2} \text{ oe}$$ condoning at most two errors or better **FT** *their* 'quadratic equation'	for completing the square see additional guidance
			A1 for each of ⁻0.3 or 5.3 or for both answers correct but to more than 1dp. or **A1FT** for two answers correct to 1 d.p. FT from *their* 'quadratic equation'	For **A1** the correct answers are ⁻0.28388… and 5.28388… and can be rounded or truncated. Note: for **A1FT** they must get **M1** first.

APPENDIX

Exemplar responses for Q4(a)

Response	Mark
sample size is small	1
no mention of subjects being randomly selected(e.g. could be her friends)	1
in the same room so they could watch each other solve it	1
Some people may be experience at solving puzzles	1
Need people of different ages	1
We don't know their gender	0

Exemplar responses for Q5(b)

Response	Mark
it may not have flown in a straight line	1
It may not have taken a direct route	1
it may have been diverted	1
it flies up [and down]	1
I might have measured wrong	1
I am human, humans make errors	1
Because I rounded to the nearest one/ not exact	1
Not precise measurements	1
I might have worked out the distance from P to Q wrong	1
The distance could have been different	1BOD
We do not know the route the pilot took	1 BOD
The plane wouldn't be travelling at that speed the whole journey	0
The pilot make have taken a break	0
The jet stream may have got them there faster	0
There may be a delay	0
Assumes plane travelled at the same speed the whole time/it may have been faster or slower at some points	0
Scale is not accurate	0

Exemplar responses for Q7(b)

Response	Mark
Road[s] are/are not straight	**1**
Land is not suitable for construction [e.g. it may be a lake]	**1**
The land may flood	**1**
Site is too small for centre	**1**
Site is too steep for construction	**1**
Land lies in a AONB/National Park	**1**
Too far from the towns (A/B/C)	**1**
The roads may not be able to cope with the increased traffic	**1**
There may be buildings there	**1**
It isn't built on a road	**0**
Its in the middle of two roads	**0**
Too close to the roads	**0**

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