AQA

Practice Paper A

Please write clearly in block capitals.

Centre number ☐☐☐☐☐ Candidate number ☐☐☐☐

Surname _Answers ._

Forename(s) _____

Candidate signature _Thank you MD, AAY & DAB_____

GCSE
Mathematics

F

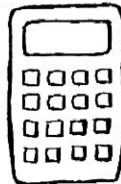Foundation   Paper 3   Calculator

Summer 2019   Time allowed: 1 hour 30 minutes

Materials
For this paper you must have:
* a calculator
* mathematical instruments.

Instructions
* Use black ink or black ball-point pen. Draw diagrams in pencil.
* Answer **all** questions.
* You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
* Do all rough work in this book. Cross through any work you do not want to be marked.

Information
* The marks for questions are shown in brackets.
* The maximum mark for this paper is 80.
* You may ask for more answer paper, graph paper and tracing paper. These must be tagged securely to the answer book.

Advice
* In all calculations, show clearly how you work out your answer.

For Examiner's Use	
Pages	Mark
3	
4 - 5	
6 – 7	
8 – 9	
10 – 11	
12 – 13	
14 – 15	
16 – 17	
18 – 19	
20 – 21	
22 – 23	
24 – 25	
26 – 27	
TOTAL	

Teacher	Class	**8300/MissB/3F**

Practice Paper Overview

Q	Topic	Mark	Total
1	Types of Number	1	
2	Properties of Shapes	1	
3	Algebraic Expressions	1	
4	Probability in Words	1	
5	Money Problem	4	
6	Ratio Problem	3	
7	Expand and Simplify	2	
8	Probability	4	
9	Listing Outcomes	2	
10	Angle Problem	3	
11	Best Buy	3	
12	Midpoints	2	
13	Percentage Change	2	
14	Transformations	4	
15	Product of Prime Factors	3	
16	Trigonometry	2	
17	Pie Chart	5	
18	Ratio Problem	4	
19	Congruence	2	
20	Quadratic Graph	7	
21	Compound Interest	4	
22	Equation of Parallel Lines	3	
23	Direct Proportion	3	
24	Scatter Graph	4	
25	Simultaneous Equation	4	
26	Reverse Averages	4	
27	Error Interval	2	
	Total		**80**

Answer **all** questions in the spaces provided.

1 Circle the all of the numbers which are **prime**.

[1 mark]

0   1   ②   ③   4
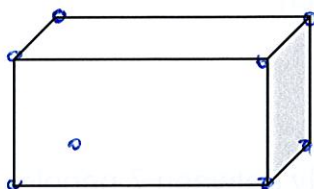
2 Here is a cuboid.

[1 mark]

Circle the amount of vertices the cuboid has.

2   4   6   ⑧   10   12

3 Circle the algebraic expression.

[1 mark]

$s = \dfrac{d}{t}$ $3x + 5 = 12$ $2(x + 4) \equiv 2x + 8$ ⟨$3x + 5$⟩

Turn over ▶

4 Here is a statement

"A number less than 7 will be scored when an

ordinary six-sided dice is rolled once."

[1 mark]

Circle the statement which best describes it's likelihood.

(Impossible)   Unlikely   Even   Likely   Certain

5 Saman buys 3 coffees at £1.20 each

4 teas at 85p each

7 sandwiches at £1.95 each

Saman shares the total cost equally between 7 people.

How much does each person pay?   **[4 marks]**

$3 \times £1.20 = £3.60$ ①

$4 \times 0.85 = £3.40$ ①

$7 \times £1.95 = £13.65$ ①

20.65

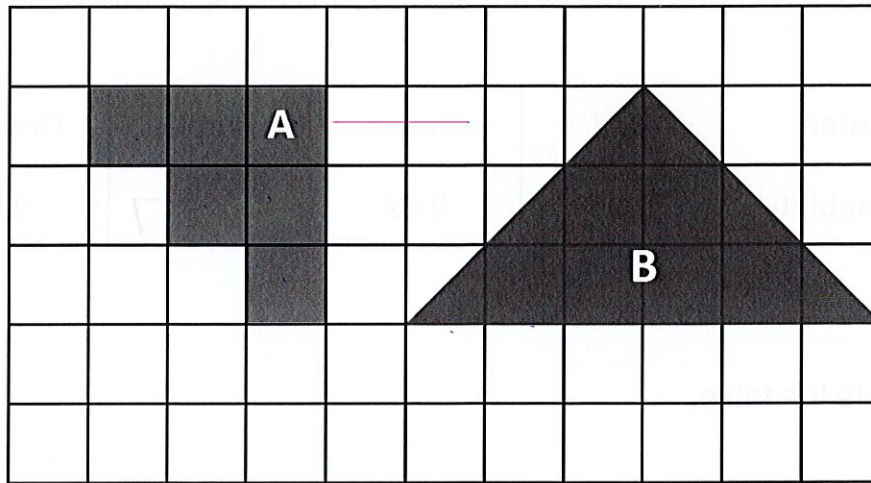Answer _____ £ 20.65 ____ Ⓐ①

5

6 Work out

area of shape A : area of shape B

Give your answer in its simplest form.

[3 marks]

① for each area

② Simplifying

Area A : Area B
6 : 9
2 : 3

Answer ___2___ : ___3___

7 Expand and simplify

$$2x - 3(x + 4)$$

[2 marks]

$$2x - 3(x + 4)$$
$$2x - 3x - 12$$ (M1)
$$-x - 12$$

Answer ___$-x - 12$___ (A1)

8   A bag contains four different counters.

A counter is taken from the bag at random.

The table below shows some of the probabilities of taking each coloured counter.

Counter	Red	Green	Purple	Orange
Probability	0.05	0.32	0·57	0.2

8 (a)   Complete the table.   **[2 marks]**

0.05+ 0.32 + 0.20 =   0·57
      ①   ①

8 (b)   What is the probability that a green counter **is not** taken from the bag?

[2 mark]

1 — 0·32   ①

Answer _____0 - 68_____ ①

4

9 On a school sports day, students must take part in one track event and one field event.

	Track	**Field**
	Hurdles (H)	Long Jump (L)
	Steeplechase (S)	Pole Vault (P)
	Relay Race (R)	High Jump (J)

List all the possible combinations of events.

[2 marks]

H L   S L   R L

H P   S P   R P   ① for 3 missing

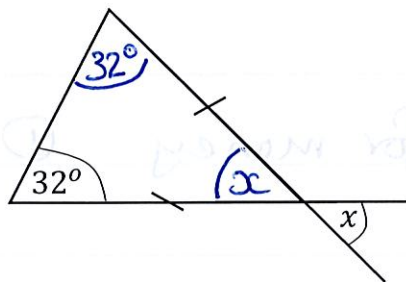H J   S H   R H

② fully correct

10 Find the size of the missing angle x.

Diagram not drawn accurately

32°

32°

x

x

[3 marks]

Give reasons for your answers

180 − (32 + 32)   Base angle in isosceles △ are equal

= 180 − 64 (M1)   Angles in a triangle equal 180°

= 116   ① for reasons.

$x = 116°$ (A1)   Vertically opposite angles are equal

Answer $x = 116°$

5

11 A shop sells two different pack sizes of Heinz Tomato soup.

(A) £2.59 for
4 x 400ml tins

(B) £3.75 for
6 x 400ml tins

Which pack size is the best value for money?
You must give a reason for your answer.

[3 marks]

(A)

$2.59 \div 4 = 0.6475$ (1)

(B)

$3.75 \div 6 = 0.625$ (1)

B is best value for money (1)

Answer _____

3

12 M is the mid point of a line segment AB.

A is the point $(2, 3)$

B is the point $(8, 11)$

Find the coordinates of M, the mid-point of the line AB.

[2 marks]

$$\left(\frac{2+8}{2}, \frac{3+11}{2}\right) = \left(\frac{10}{2}, \frac{14}{2}\right) \quad ① \quad oe.$$

$$= (5, 7) \quad ①$$

award ① for one correct coordinate.

Answer _____

13 Paul buys a laptop from PC World for £529.

A year later it is worth £444.36.
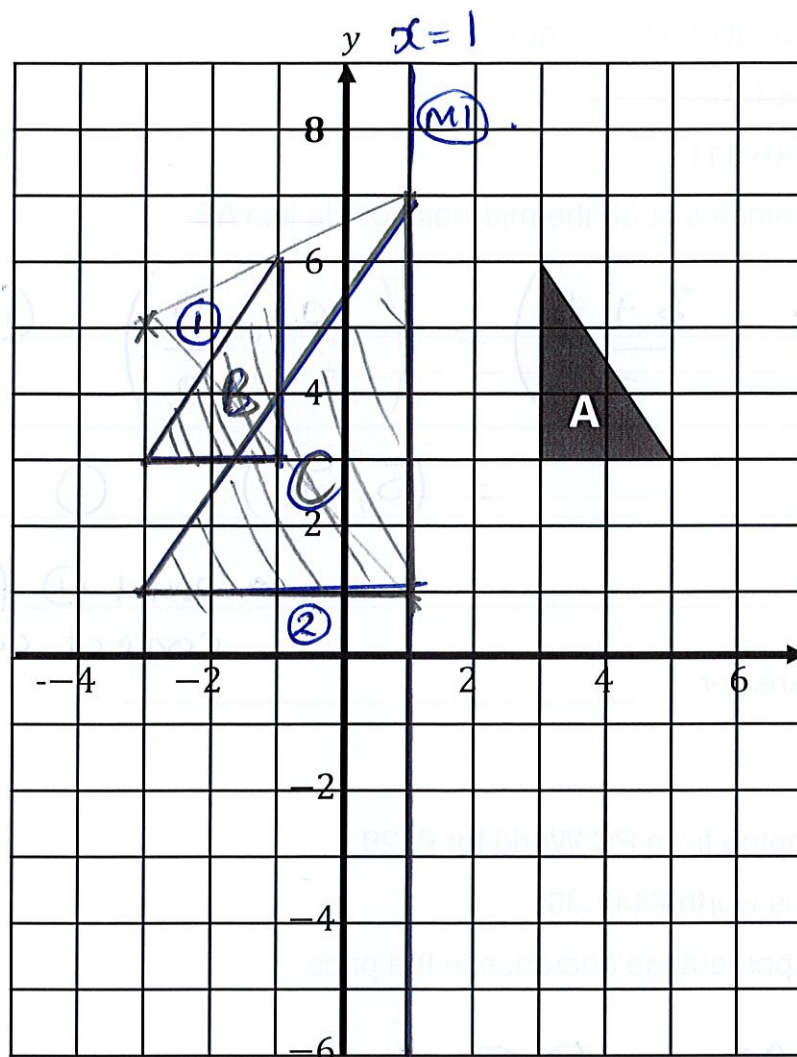
Calculate the percentage decrease in the price.

[2 marks]

$$\frac{Decrease}{Original} \times 100.$$

$$\frac{529 - 444.36}{529} \times 100 = \frac{84.64}{529} \times 100$$

Answer ____ 16 % ____

4

14
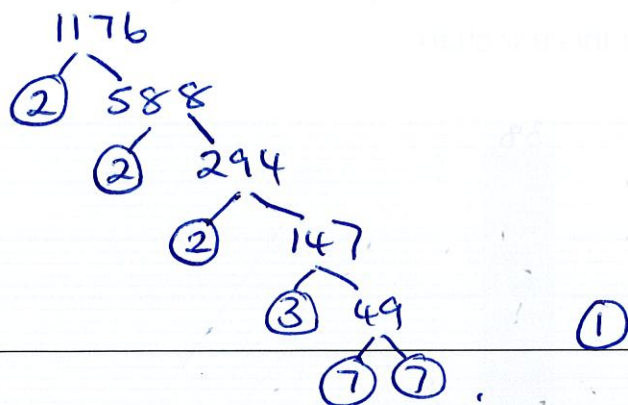
Triangle **A** is drawn on a coordinate grid.

Reflect triangle **A** in the line $x = 1$ and label this triangle **B**.

Enlarge triangle **B** by a scale factor of 2 from the centre $(-3, 5)$
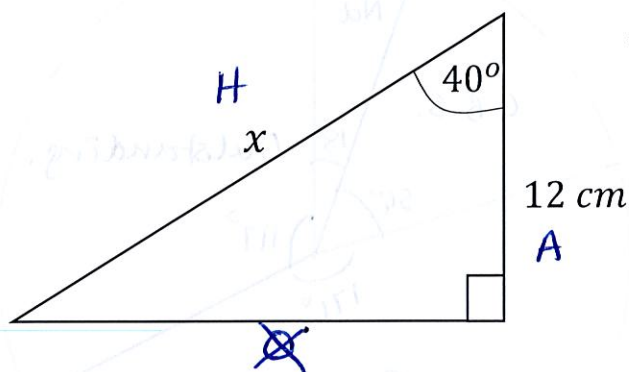
label this triangle **C**.

[4 marks]

award ① for B correct shape (congruent).

award ① for C enlargement SF2.

_____

_____

_____

_____

2

15 Express 1176 as a product of its prime factors in index form. **[3 marks]**

$$1176$$

(2) 588

(2) 294

(2) 147

(3) 49

(7)(7)

(1)

$2 \times 2 \times 2 \times 3 \times 7 \times 7$ (1)

Answer $2^3 \times 3 \times 7^2$ (1)

16 Work out the length x.

Not drawn accurately

H

x

40°

12 cm

A

[2 marks]

S$\overset{O}{H}$(C$\overset{A}{H}$)T$\overset{O}{A}$.

$\cos 40° = \dfrac{12}{x}$ (1)
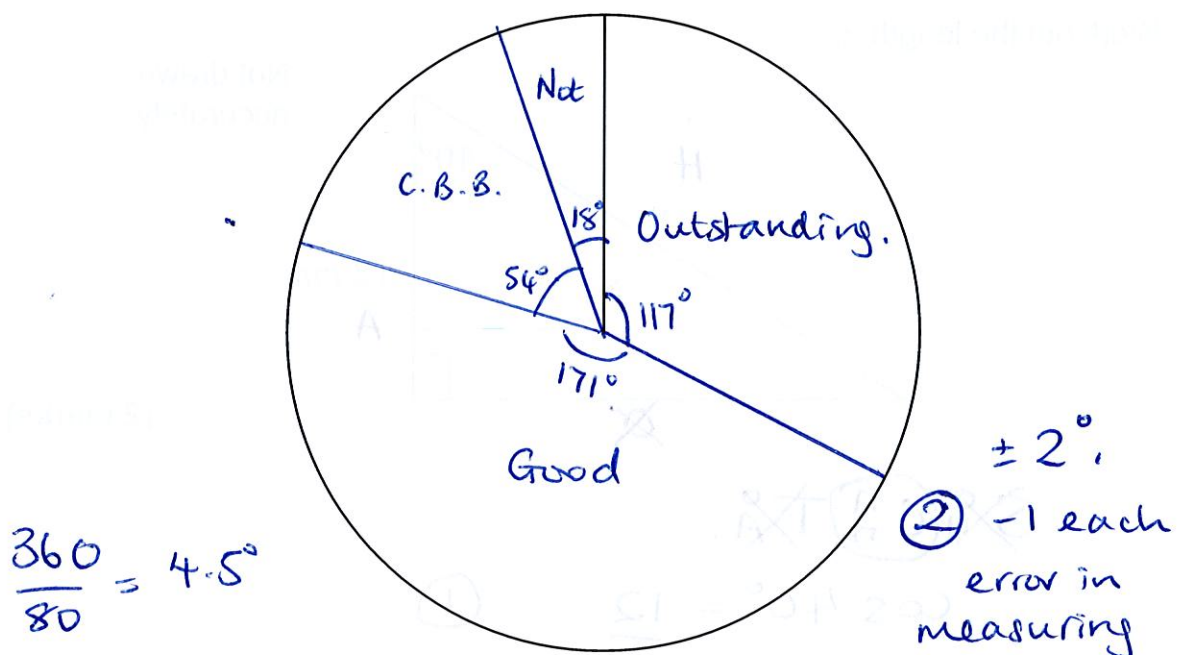
$x = \dfrac{12}{\cos 40°}$

Answer $15.7 cm$ (1) cm

accept 15.66

17 A school asked 80 students what they thought of the schools canteen.

The results are shown in this bar chart.
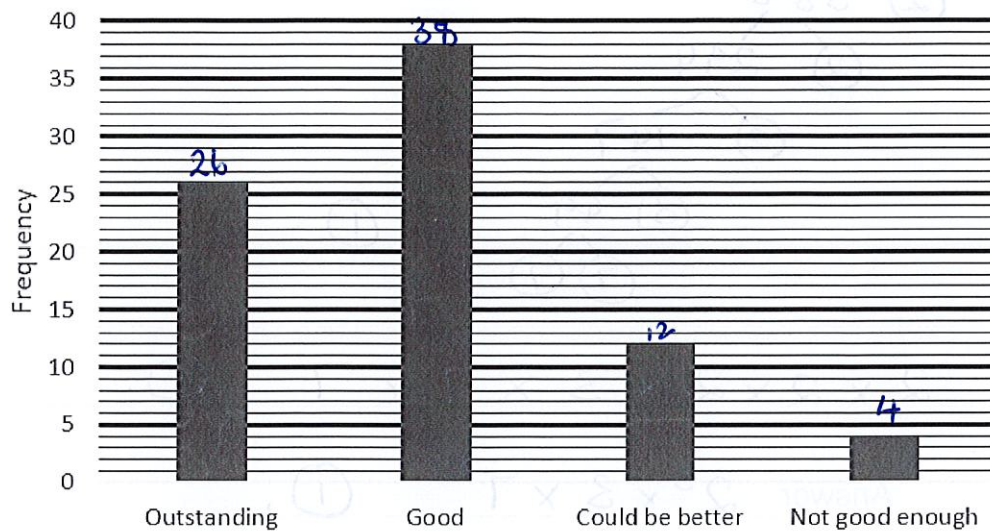
Draw and label a pie chart to represent this data.

[5 marks]

$\frac{360}{80} = 4.5°$

$\pm 2°$

② −1 each error in measuring

Angle	O	G	B	N
	26×4·5	38×4·5	12×4·5	4×4·5
	117°	171°	54°	18

②

5

18 Yellow paint costs £3.60 per litre.

Blue paint costs £2.90 per litre.

Yellow paint and blue paint are mixed in the ratio 1:3 to make green paint.

Work out the cost of 14 litres of green paint.

[4 marks]

Y | 3.5 | ↑ 14

B | 3.5 | 3.5 | 3.5 | ↓

$14 \div 4 = 3.5$ ✓

3.5 L Yellow.   10.5 L Blue.

$3.5 \times £3.60$ $10.5 \times £2.90$
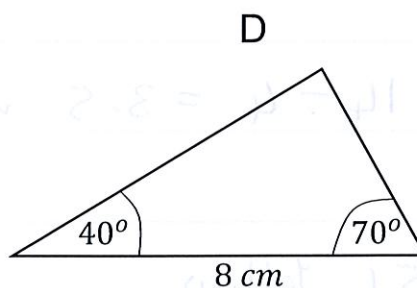
$= £12.60$ ✓ $£30.45$ ✓

$£12.60 + £30.45$

$= £43.05$

Answer   £43.05 ✓

4

19 Here are four triangles

Not drawn accurately

A

B

8 cm

70°   40°

40°   70°

8 cm

C

D

8 cm

70°   40°

40°   70°

8 cm
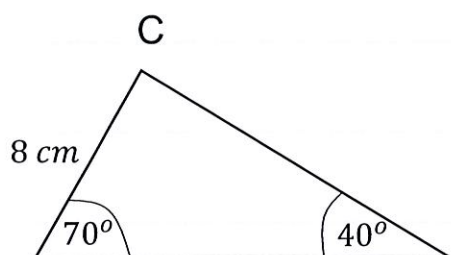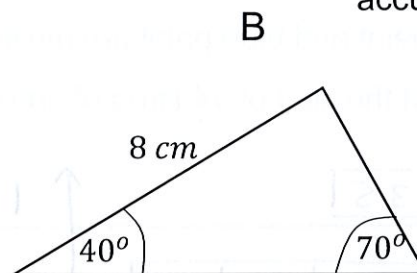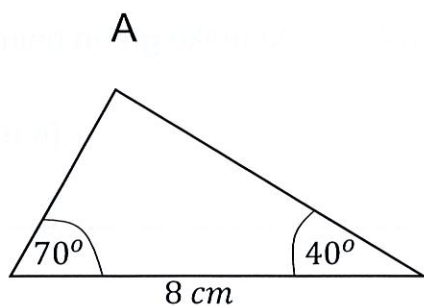
19 (a) Which two triangles are congruent? Circle your answers.

[1 mark]

(A)   B   C   (D)

19 (b) Circle the reason for your answer to part (a).

[1 mark]

SSS   (ASA)   SAS   RHS

Do not write outside the box

2

20 (a) Complete the table of values for $y = x^2 + 4x - 3$. **[2 marks]**

x	-4	-3	-2	-1	0	1	2
y	-3	-6	-7	-6	-3	2	9

✓✓ 3 correct

✓ 2 correct.

20 (b) On the gird, draw the graph of $y = x^2 + 4x - 3$.

[2 marks]
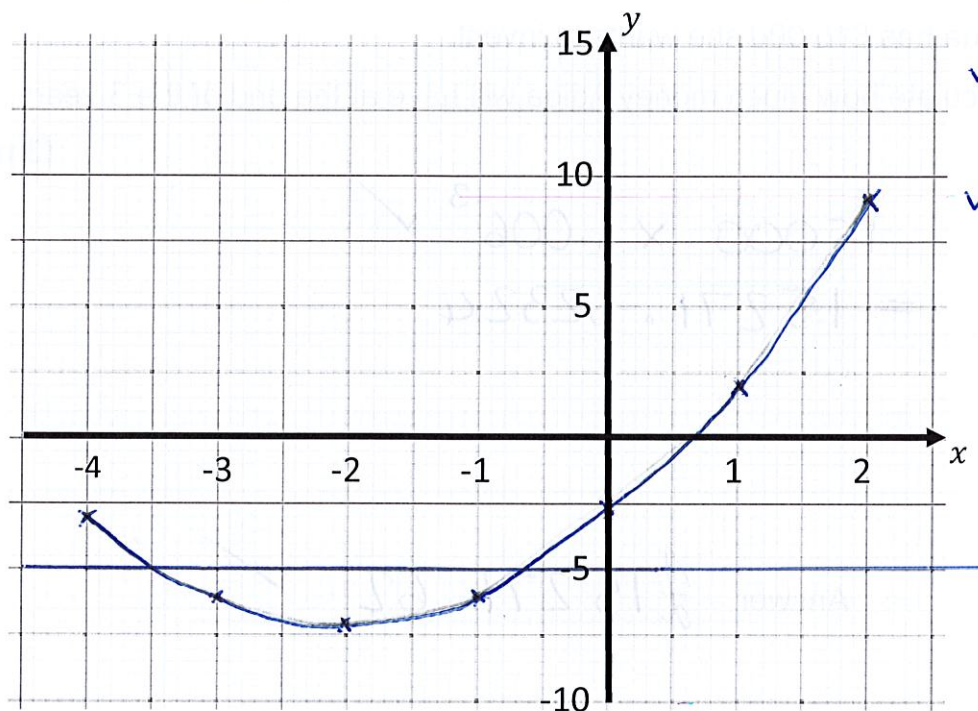
✓ points

✓ smooth curve

20 (c) Circle the coordinates of the turning point of the curve.

[1 mark]

$(0, -3)$ $(-2, -7)$ $(-2, 1)$ $(2, -7)$ $(4, -3)$

20 (d) Use the graph to find approximate solutions to $x^2 + 4x - 3 = -5$

[2 marks]

$y = -5$

y

$x = \underline{-3.5}$ ✓ $x = \underline{-0.7}$ ✓

21 Here is the interest rate for a bank account.

Banks R Us

Interest:
0.6% per year compound interest.

No withdrawals allowed until the end of three years.

100% + 0.6% = 100.6%
1.006 ✓
for % or multiplier

Adiqa has £15 000 she wants to invest.

21 (a) Calculate how much money Adiqa will have at the end of the 3 years.

[3 marks]

15000×1.006^3 ✓

$= 15271.62324$

Answer £15 271. 62 ✓

21 (b) Give a reason why Adiqa may not want to invest her money into a Banks R Us account.

[1 mark]

She can't withdraw money in the full three years. She may need to access her money.

22 The straight line L has equation $y = 4x + 5$ · · · $m = 4$ and $c = 5$

The straight line M is parallel to line L and passes through the point (2, 6). $x = 2$, $y = 6$

Find the equation of line M · → The same gradient $m = 4$

[3 marks]

$$y = mx + c$$
$$y = 4x + c \checkmark$$
$$6 = 4(2) + c$$
$$6 = 8 + c$$
$$-8 \quad -8$$
$$-2 = c \checkmark$$

Answer $\underline{\quad y = 4x - 2 \quad}$ $\checkmark$

23 y is directly proportional to the square of x. $y \propto x^2$

x	6	a
y	9	16

Work out the value of a. $x = 6$, $y = 9$ $\qquad$ $y = 16$

$$y = kx^2 \checkmark \longrightarrow \text{So } y = \frac{x^2}{4} \text{ or } y = 0.25x^2$$
$$9 = 6^2 \times k$$
$$9 = 36k \qquad\qquad 16 = \frac{x^2}{4}$$
$$\frac{9}{36} = k \qquad\qquad 64 = x^2$$
$$k = \frac{1}{4} \text{ or } 0.25 \qquad x = \sqrt{64} = 8$$

$a = \underline{\quad 8 \quad}$ $\checkmark$

24 Below is a scatter graph showing the air temperature and the height above sea level.
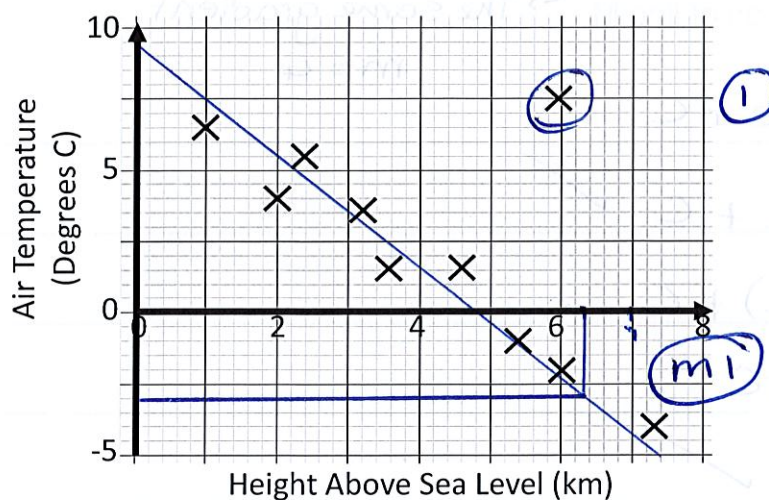
24 (a) Describe the correlation between the air temperature and the height above sea level. **[1 mark]**

Strong negative ①

(Negative accepted)

24 (b) Circle and write down the <u>coordinates</u> of the outlier. **[1 mark]**

must have brackets.

Answer (6, 7.5)

24 (c) Find an estimate of the height above sea level when the air temperature is $-3^{o}C$. **[2 marks]**

Answer 6.3km ①

4

25 Solve the equations

$$3x + 5y = 19$$

$$4x - 2y = -18$$

You must use an algebraic method.

[4 marks]

Same

Takeaway

Opposite   +

Plus.

$$6x + 10y = 38$$

$$20x - 10y = -90 \quad ①$$

$$26x = -52$$

$$x = -2 \quad ①$$

Sub in $3x + 5y = 19$

$$(3x - 2) + 5y = 19$$

$$-6 + 5y = 19 \quad ①$$

$$5y = 25$$

$$y = 5 \quad ①$$

$x =$ ___-2___ $y =$ ___5___

4

Do not write
outside the
box

26 Five integers have

a mode of 7

a median of 9

a mean of 8.

What is the greatest possible range of the five integers?

You must show your working.

[4 marks]

$8 \times 5 = 40$ ①

$7 + 7 + 9 = 23$ ①

$40 - 23 = 17.$

Greatest range 1, 16

$16 - 1$ ①

Answer _____15_____ ①

27 Sally won a race with a time of 89.2 seconds.

This time, t, is to the nearest tenth of a second.

Complete the error interval due to rounding.

[2 marks]

_____89.15_____ ✓ $\leq t <$ _____89.25,_____ ✓

End of Questions

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