Please write clearly in block capitals.

Centre number | | | | | | Candidate number | | | | |

Surname _____

Forename(s) _____

Candidate signature _____

I declare this is my own work.

GCSE MATHEMATICS

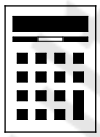
F

Foundation Tier Paper 3 Calculator

Wednesday 11 June 2025 Morning Time allowed: 1 hour 30 minutes

Materials

For this paper you must have:



- a calculator
- mathematical instruments
- the Formulae Sheet (enclosed).

Instructions

- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- 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.
- If you need extra space for your answer(s), use the lined pages at the end of this book. Write the question number against your answer(s).
- 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 this answer book.

Advice

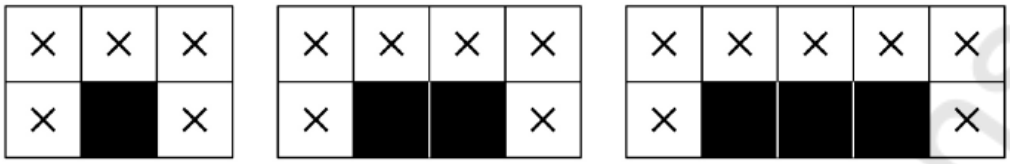
In all calculations, show clearly how you work out your answer.

For Examiner's Use	
Pages	Mark
2–3	
4–5	
6–7	
8–9	
10–11	
12–13	
14–15	
16–17	
18–19	
20–21	
22–23	
24–25	
TOTAL	

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

Do not write outside the box

1 Here are the first three patterns in a sequence.



Pattern 1 Pattern 2 Pattern 3

1 (a) Draw Pattern 4 on the grid.

[1 mark]

1 (b) How many squares in Pattern 6 would have a cross (X) in them?

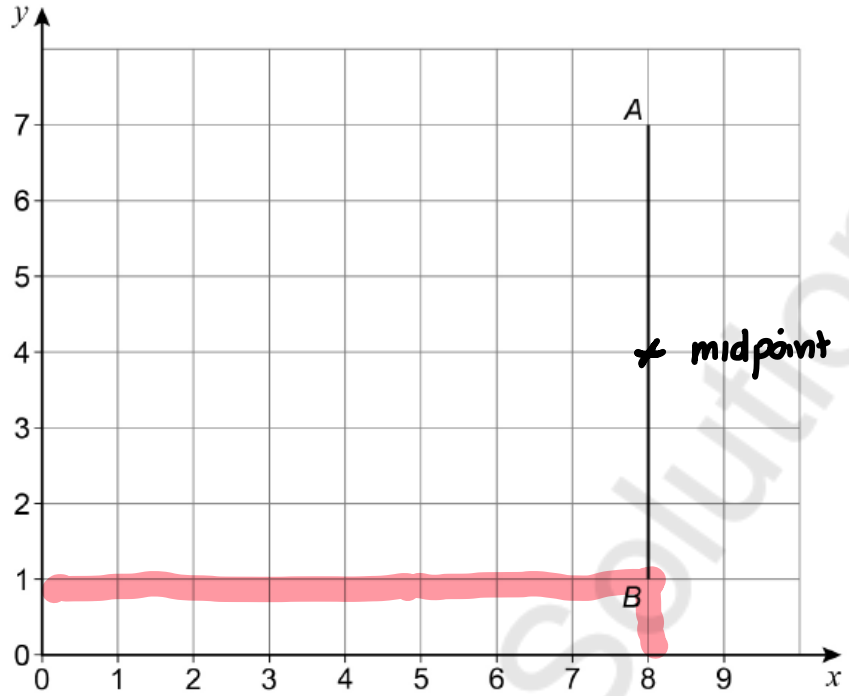
[2 marks]

Pattern	Crosses
1	5
2	6
3	7
4	8
5	9
6	

Answer 10

Do not write outside the box

2 Line *AB* is on a grid.



2 (a) Write down the coordinates of *B*.

[1 mark]

Answer (8 , 1)

2 (b) Write down the coordinates of the midpoint of the line *AB*.

halfway

[1 mark]

Answer (8 , 4)

5

Do not write outside the box

3 (a) Jodie makes a sandwich using one type of bread and one filling.

Bread	Filling
White (W) or Brown (B)	Cheese (C) or Ham (H) or Tuna (T)

Complete the table of the 6 possible sandwiches they could make.

One has been done for you.

[2 marks]

WC
WH
WT
BC
BH
BT

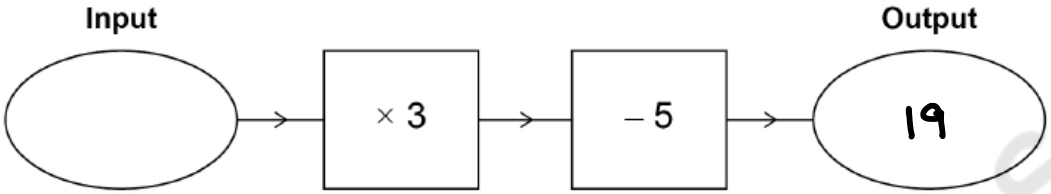
3 (b) What **fraction** of the possible sandwiches use Cheese?

[1 mark]

Answer $\frac{2}{6}$

Do not write outside the box

4 Here is a number machine.



4 (a) Work out the **output** when the input is 4

[1 mark]

4 x 3 = 12

12 – 5 = 7

Answer 7

4 (b) Work out the **input** when the output is 19

[2 marks]

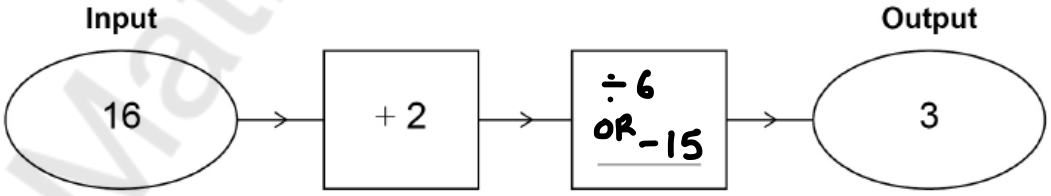
19 + 5 = 24

24 ÷ 3 = 8

Answer 8

4 (c) Complete this number machine.

[1 mark]



16 + 2 = 18

18 ÷ 6 = 3 OR 18 – 15 = 3

7

Turn over ►

Do not write outside the box

5 (a) Complete the table to show equivalent fractions, decimals and percentages.

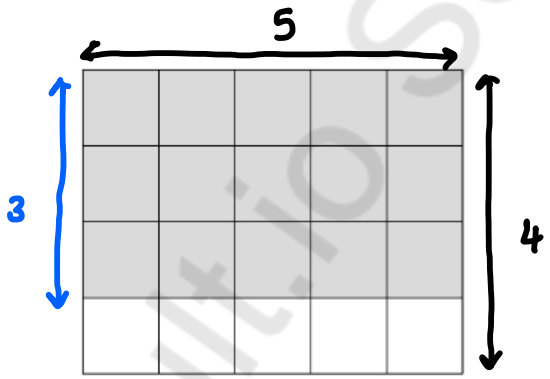
[3 marks]

Fraction	Decimal	Percentage
$\frac{1}{2}$	0.5	50%
$\frac{1}{10}$	$1 \div 10$ 0.1	10%
$\frac{2}{5}$	0.4	40%

$\times 100$

5 (b) What **percentage** of this grid is shaded?

[1 mark]



$5 \times 4 = 20$

$5 \times 3 = 15$

$\frac{15}{20} \times 5 = \frac{65}{100}$

Answer 65 %

Do not write outside the box

6 Which metric unit would be **most** suitable for each measurement?

Tick **one** box for each.

[3 marks]

	centimetres (cm)	**metres (m)**	**kilometres (km)**
Distance between two villages	☐	☐	✓
Length of a pencil	✓	☐	☐
Height of a building	☐	✓	☐

Turn over for the next question

7

Do not write outside the box

7 A mobile phone company has two different plans.

Plan A	**Plan B**
Phone £500 **plus** £11 per month for 24 months	Phone is free **plus** £35 per month for 24 months

7 (a) Show that the **total** cost of Plan A for 24 months is £764

[2 marks]

500 + (11 x 24)

500 + 264 = £764

7 (b) During a sale, the **total** cost of Plan B is reduced by 10%

Which plan is cheaper for 24 months during the sale?

Tick a box.

☐ Plan A ☑ Plan B

Show working to support your answer.

[3 marks]

A) £764

B) £35 x 24 = £840

100% − 10% = 90%

0.9 x 840 = £756

Do not write outside the box

8 One burger costs £3.80

Two burgers and **three** hotdogs cost £15.85

Work out the cost of **one** hot dog.

[3 marks]

b = £3.80

2b + 3h = £15.85

2(3.80) + 3h = 15.85

7.6 + 3h = 15.85

-7.6 -7.6

3h = 8.25

÷3 ÷3

h = 2.75

Answer £ 2.75

Turn over for the next question

8

Do not write outside the box

9 (a) The square of a **whole** number is a two-digit number.

Work out

the **smallest** number that could have been squared

and

the **largest** number that could have been squared.

[3 marks]

Squares: 1 4 9 16 25 36 49 64 81 100

4^2 9^2

smallest 4

largest 9

9 (b) Which has the **larger** value 0.8^2 or 0.8^3 ?

Tick a box.

0.8^2 ✓ 0.8^3 ☐

Give a reason for your answer.

[1 mark]

$0.8^2 = 0.64$

$0.8^3 = 0.512$

Do not write outside the box

10 (a) £4.56 is paid using the smallest possible number of coins.

– most common

What is the **modal value** of the coins used?

You **must** show your working.

[2 marks]

£2 £2 50p 5p 1p

Answer £2

10 (b) Here is a list of five numbers.

5 9 4 16 8

An extra number is put into the list.

The **median** of the numbers is now 7

Work out the extra number.

[2 marks]

4 5 8 9 16

$\frac{x+8}{2} = 7$

~~4~~ ~~5~~ 6 8 ~~9~~ ~~16~~

$x + 8 = 14$ $x = 6$

Answer 6

8

Do not write outside the box

11 Paul buys plates for his cafe.

The cafe has 20 tables.

He buys 6 plates for each table plus an extra 70% for spares.

Work out how many plates Paul buys in **total**.

[3 marks]

$6 \times 20 = 120$ plates

70% of 120

$0.7 \times 120 = 84$

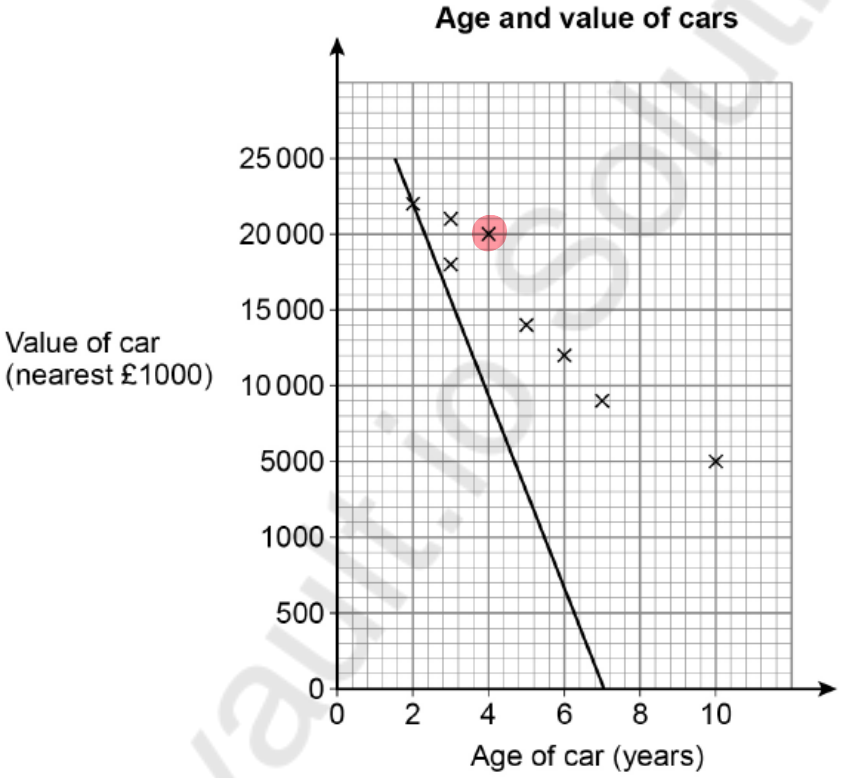
$120 + 84 = 204$

Answer 204

12 The table shows the age and value of some cars.

Age of car (years)	2	3	3	4	5	6	7	10
Value of car (nearest £1000)	22 000	21 000	18 000	19 000	14 000	12 000	9000	5000

Anil draws this scatter diagram and line of best fit for the data.



Write down **two** mistakes he has made.

[2 marks]

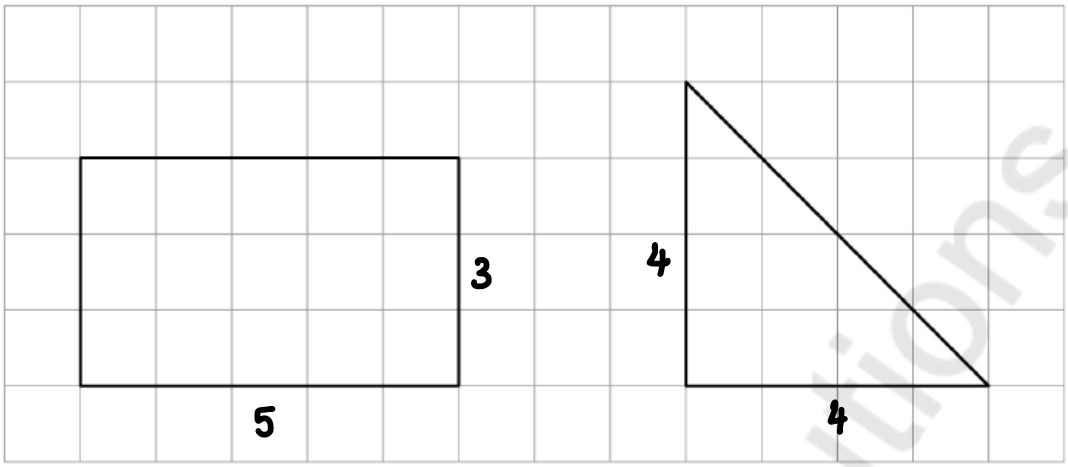
Mistake 1 Line of best fit is incorrect

Mistake 2 Incorrect plotted value (4, 20000)

5

Do not write outside the box

13 A rectangle and a triangle are drawn on a square grid.



Work out the ratio area of rectangle : area of triangle

[3 marks]

Area rectangle = l x w = 5 x 3 = 15

Area triangle = $\frac{1}{2}$bh = $\frac{1}{2}$ x 4 x 4 = $\frac{1}{2}$ x 16 = 8

15 : 8

Answer 15 : 8

Do not write outside the box

14 A box contains cards that are either red, blue, green or yellow.

Colour	Red	Blue	Green	Yellow
Probability	0.1	0.24	0.33	0.33

= 1

14 (a) P(green) = P(yellow)

Complete the table.

[2 marks]

0.1 + 0.24 = 0.34

1 − 0.34 = 0.66

0.66 ÷ 2 = 0.33

14 (b) There are 600 cards in the box.

How many cards are **not** blue?

[3 marks]

p(other colours) = 1 − 0.24

= 0.76

600 × 0.76 = 456

Answer 456

8

Do not write outside the box

15 A and B are triangles.

For each statement, tick the correct box to describe A and B.

[3 marks]

	Always congruent	Sometimes congruent	Never congruent
A's sides are the same lengths as B's sides	✓		
A's angles are the same as B's angles		✓	
A is an enlargement of B with scale factor 2			✓

SSS

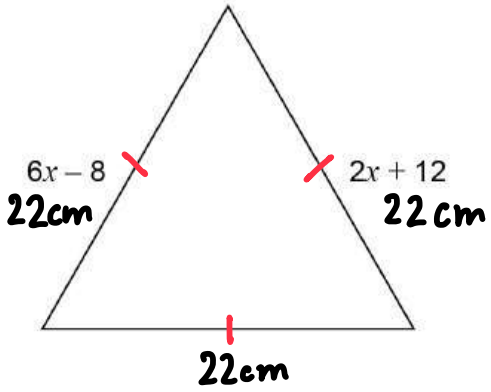
Similar not congruent

Do not write outside the box

16 Here is an equilateral triangle.

All measurements are in centimetres.

Not drawn accurately



Work out the value of the perimeter of the triangle.

[4 marks]

$6x - 8 = 2x + 12$

$-2x \quad -2x$

$4x - 8 = 12$

$+8 \quad +8$

$4x = 20$

$\div 4 \quad \div 4$

$x = 5$

$2x + 12$

$2(5) + 12$

$10 + 12 = 22$

Perimeter = $22 + 22 + 22$

Answer 66 cm

7

Do not write outside the box

17 Sid and Zak each throw the same biased coin.

Here is some information about their throws.

Sid	80 throws	Relative frequency of Heads is 0.75	60 Heads
Zak	120 throws	72 are Heads	

17 (a) Work out the relative frequency of Heads for the **200** throws.

[2 marks]

$0.75 \times 80 = 60$

$60 + 72 = 132$

Answer $\frac{132}{200}$

17 (b) Which results would give the **best** estimate of the probability of Heads?

Tick **one** box.

- ☐ Sid's 80 throws
- ☐ Zak's 120 throws
- ☑ All 200 throws

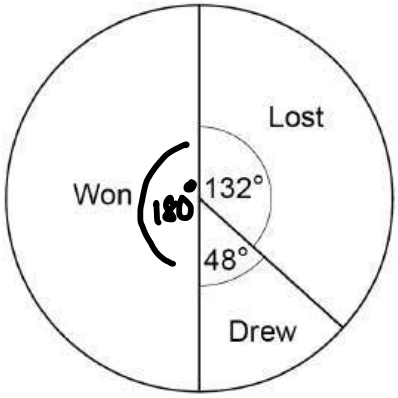
Give a reason for your answer.

[1 mark]

Biggest number of trials.

Do not write outside the box

18 The pie chart represents the results of matches played by a team.



30 matches were **won**.

How many matches were lost?

[3 marks]

$360° \div 2 = 180°$

$180° = 30$ (÷6)

$132° \div 6 = 22$

Answer 22

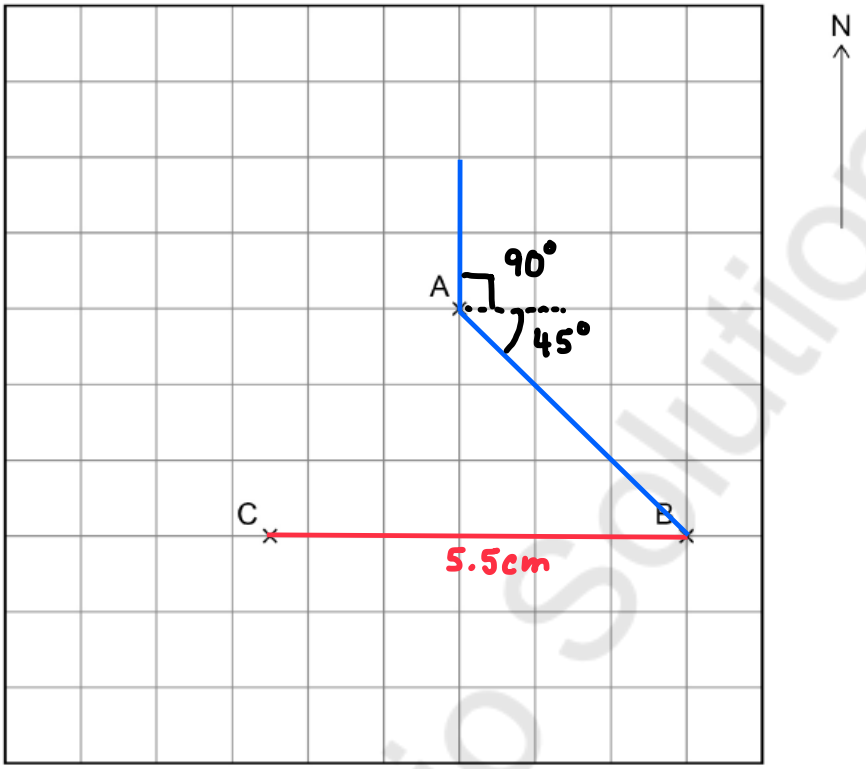
Turn over for the next question

6

Do not write outside the box

19 Here is a scale diagram showing towns A, B and C on a centimetre grid.

Scale 1 : 200 000



19 (a) Work out the **actual** distance from B to C.

Give your answer in kilometres.

[4 marks]

×5.5 1cm : 200,000 cm ×5.5

5.5cm : 1,100,000 cm

÷100

11000 m

÷1000

11 km

Answer 11 km

[10.6 to 11.4]

Do not write outside the box

19 (b) B is South East of A.

Write down the bearing of B from A.

[1 mark]

Answer 135 °

20 A linear sequence has

- 2nd term = 6
- 5th term = 18

Work out the nth term of the sequence.

[3 marks]

— 6 — — 18

18 − 6 = 12

12 ÷ 3 = 4

−2 2 6 10 14 18

−4 +4

Answer 4n − 2

Turn over for the next question

8

Do not write outside the box

21 Ary, Bea and Cat each have an amount of money.

Cat has £280

- Cat's amount is $\frac{2}{3}$ of Bea's amount.
- Ary's amount : Bea's amount = 5 : 12

Work out how much money Ary has.

[3 marks]

Bea : $\frac{2}{3}$ = £280

280 ÷ 2 = £140

£140 x 3 = £420

A : B

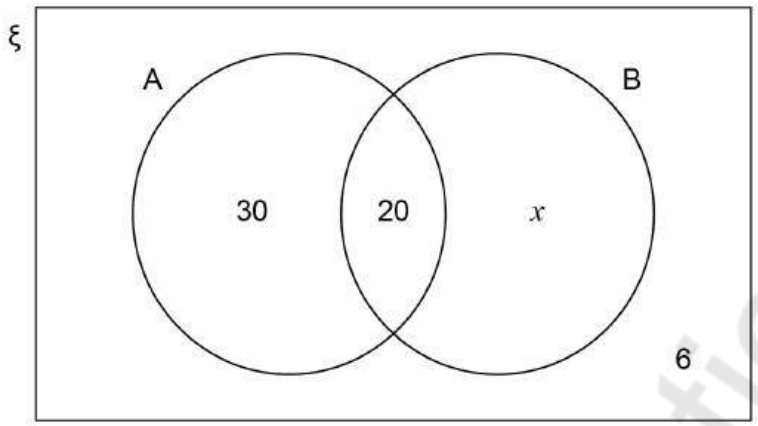
5 : 12 ×35

×35 £175 : £420

Answer £ 175

Do not write outside the box

22 The Venn diagram shows some of the **numbers** of items in each set.



$P(A) = \frac{1}{2}$

Work out the value of x.

[2 marks]

A = 30 + 20

= 50

$\frac{1}{2}$ is 50

Whole is 100

x = 44

$x = 50 - 6$

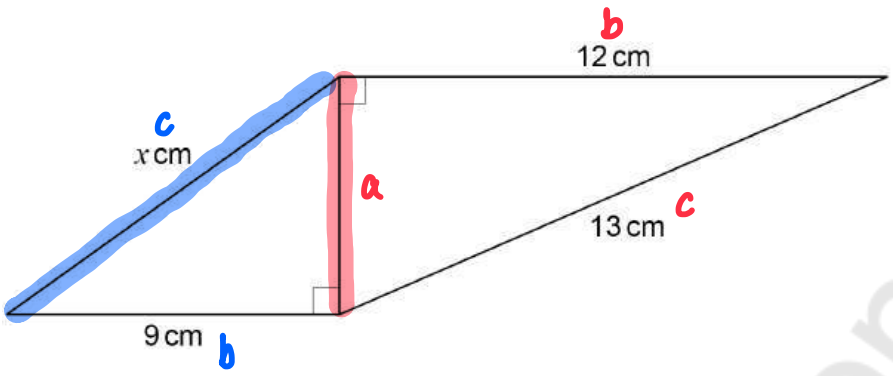
$= 44$

Turn over for the next question

5

Do not write outside the box

23



Not drawn accurately

Use Pythagoras' theorem to show that the value of x is between 10 and 11

[4 marks]

$a^2 + b^2 = c^2$

$a^2 + 12^2 = 13^2$

$a^2 = 13^2 - 12^2$

$a = \sqrt{13^2 - 12^2}$

$a = 5$ cm

$a^2 + b^2 = c^2$

$5^2 + 9^2 = x^2$

$\sqrt{5^2 + 9^2} = x$

$\sqrt{106} = x$

$10.29563014 = x$

Do not write outside the box

24 (a) Write down the equation of a straight line parallel to $y - 2x = 9$

$y = mx + c$

same gradient $+2x \quad +2x$

[1 mark]

$y = 2x + 9$

e.g. $y = 2x + 12$

[12 can be any other number except +9]

Answer e.g. $y = 2x + 12$

24 (b) A straight line

- has gradient 5
- passes through the point (3, 7)

Circle the equation of the line.

[1 mark]

$y = mx + c$

gradient

$y = 3x - 2$ → gradient = 3

$y = 3x + 7$ → gradient = 3

$y = 5x$ → gradient = 5

$y = 5 \times x$

$7 \neq 5 \times 3$

$y = 5x - 8$

END OF QUESTIONS

6

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ANSWER IN THE SPACES PROVIDED

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Question number	**Additional page, if required.** **Write the question numbers in the left-hand margin.**

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