

# AQA



Please write clearly in block capitals.

Centre number

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Candidate number

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Surname

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Forename(s)

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Candidate signature

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## GCSE MATHEMATICS

## PREDICTED TOPIC PAPER

# Very Likely

# F

### June 2025

### Paper 2 Calculator

#### 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
- 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	
<b>TOTAL</b>	

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

**Q1.**

Match each expression on the left with the simplified expression on the right.

One has been done for you.

$3a + 4a$		$12a$
$14a - 2a$		$7a$
$3a \times 3a$		$3a$
$6 \times 3a$		$18a$
$12a \div 4$		$9a^2$
		$6a$

(Total 4 marks)

**Q2.**

Which unit is most suitable for measuring the length of a tennis court?

Circle your answer.

kilometres

metres

centimetres

millimetres

(Total 1 mark)

**Q3.**

Pens cost 20p each.

Rulers cost 60p each.

Saj buys some pens and some rulers.

He buys 8 rulers.

The total cost is £10

How many pens does he buy?

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Answer \_\_\_\_\_

(Total 3 marks)

**Q4.**

$$r : w = 1 : 4$$

Write down the ratio  $r^2 : w^2$

Answer \_\_\_\_\_ : \_\_\_\_\_

(Total 1 mark)

**Q5.**

A fair ordinary dice is thrown once.

Circle the probability of getting a 2 or a 3

$$\frac{1}{6}$$

$$\frac{2}{6}$$

$$\frac{3}{6}$$

$$\frac{5}{6}$$

(Total 1 mark)

**Q6.**

How many minutes are there in  $2\frac{1}{4}$  hours?

Circle your answer.

135

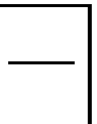
145

215

225

(Total 1 mark)

Do not write  
outside the  
box



**Q7.**

What is  $\frac{3}{2}$  as a decimal?

Circle your answer.

1.05

1.1

1.5

3.2

**(Total 1 mark)****Q8.**

Which of these numbers is three less than a square number?

Circle your answer.

5

19

22

34

**(Total 1 mark)****Q9.**

Ali revises each day for five days.

On each of the first **four** days he revises from 5 pm to 8 pm

On the fifth day he starts revising at 1 pm

He finishes when he has revised for a **total** of 18 hours for the five days.

What time does he finish on the fifth day?

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Answer \_\_\_\_\_

**(Total 3 marks)**

**Q10.**

Sofia is revising for Maths.

She tries to work out  $3 \times (4 + 2)$

Here is her working.

$\begin{aligned} 3 \times (4 + 2) &= 12 + 3 \\ &= 15 \end{aligned}$
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What mistake has she made?

(Total 1 mark)

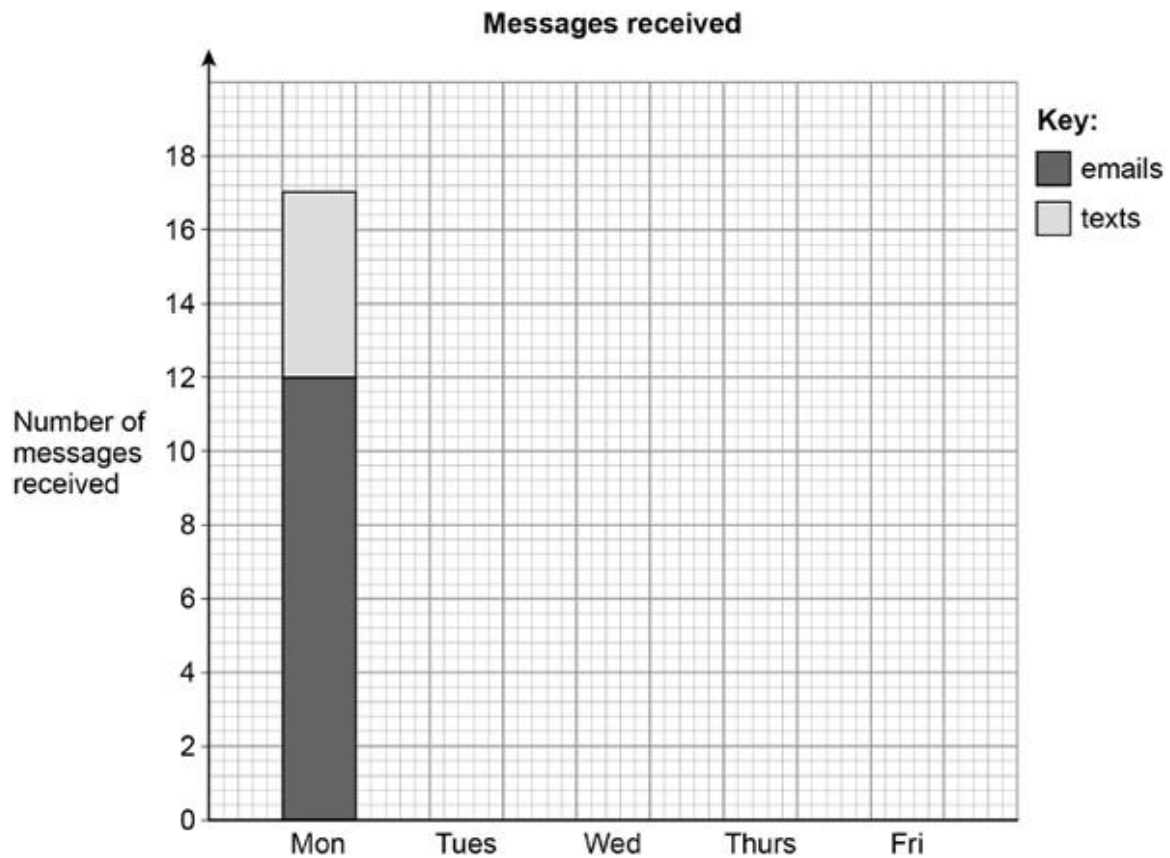
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**Q11.**

The table shows the number of messages Sam received each day for five days.

	Messages	
	Number of emails	Number of texts
Monday	12	5
Tuesday	8	6
Wednesday	10	3
Thursday	6	6
Friday	12	4

- (a) Sam draws a composite bar chart to represent the data.  
He has drawn the bar for Monday.



Complete the chart.

(2)

(b) In total, what fraction of the messages were emails?

Give your answer in its simplest form.

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Answer \_\_\_\_\_

(3)

(Total 5 marks)

**Q12.**

Circle the fraction equal to 0.12

$$\frac{1}{12}$$

$$\frac{3}{25}$$

$$\frac{1}{8}$$

$$\frac{6}{5}$$

(Total 1 mark)

**Q13.**

Which is longer,  $\frac{3}{4}$  of a day or 1000 minutes?

You **must** show your working.

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Answer \_\_\_\_\_

(Total 3 marks)

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**Q14.**

In this question, use

1 kilogram = 2.2 pounds

1 stone = 14 pounds

Change 70 kilograms into stones.

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Answer \_\_\_\_\_ stones

(Total 3 marks)

**Q15.**

Write down **all** the factors of 45

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Answer \_\_\_\_\_

(Total 2 marks)



**Q16.**

Put these numbers in order from smallest to largest.

$$\frac{31}{40}$$

$$\frac{3}{4}$$

$$\frac{7}{10}$$

0.725

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Smallest \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Largest \_\_\_\_\_

(Total 2 marks)

**Q17.**

Which two numbers, when added together, make a cube number?

Circle your answer.

1 and 8

2 and 4

9 and 18

8 and 64

(Total 1 mark)

**Q18.**

Simplify fully  $2x + 9y + 1 + 8x - 5y - 7$

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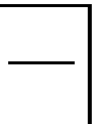
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Answer \_\_\_\_\_

(Total 3 marks)



**Q19.**

Circle the expression that is equivalent to  $0.5a^2$

$a$

$\frac{a}{2}$

$\frac{a^2}{2}$

$\frac{a^2}{4}$

(Total 1 mark)

**Q20.**

A reel holds 9.5 metres of ribbon.

2 pieces of ribbon are cut from the reel.

Each piece is 20 centimetres long.

What length of ribbon is left on the reel?

State the units of your answer.

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Answer \_\_\_\_\_

(Total 3 marks)

**Q21.**

A company uses this formula to work out the cost, £A, of a taxi ride.

$$A = 4 + 1.8m + b$$

£4 is a fixed charge

$m$  is the number of miles travelled

£ $b$  is a charge for booking online

- (a) Clare books a taxi online and travels 8 miles.  
She pays £20 altogether.

How much is the charge for booking online?

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Answer £ \_\_\_\_\_

(3)

- (b) A different company  
has a fixed charge of £3  
charges £1.90 per mile  
has no charge for booking online.

Write a formula for the cost, £C, of a taxi ride with this company.

Answer £ \_\_\_\_\_

(1)

(Total 4 marks)

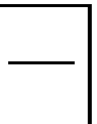
**Q22.**

The probability that A is the outcome of an experiment is 0.2

Circle the probability that A is **not** the outcome.

0                      0.2                      0.5                      0.8

(Total 1 mark)



**Q23.**

Match each sequence to its description.

One has been done for you.

1 1 2 3 5 8

1 2 4 8 16 32

1 2 3 4 5 6

1 3 6 10 15 21

1 4 9 16 25 36

1 8 27 64 125 216

Arithmetic progression

Geometric progression

Fibonacci sequence

Triangular numbers

Cube numbers

Square numbers

(Total 4 marks)

**Q24.**

$x$	0	2	4	6	8	
$y$	3	7	11		19	23

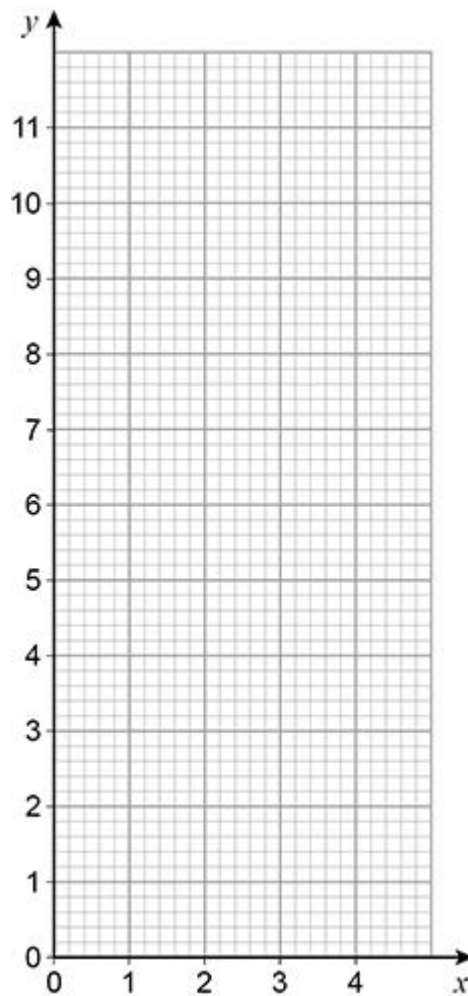
The  $x$ -values in the table make a linear sequence.

The  $y$ -values in the table make a different linear sequence.

(a) Complete the table.

(2)

(b) Draw a straight line passing through the points (0, 3), (2, 7) and (4, 11)



(2)

(c) Use the graph to work out the value of  $y$  when  $x = 3$

$y =$  \_\_\_\_\_

(1)

(Total 5 marks)

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outside the  
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**Q25.**

Jess saves 2p, 5p and 10p coins.

She has

- 45 10p coins
- 8 times as many 2p coins as **10p coins**
- £17.70 in total.

Work out      total **value** of 2p coins : total **value** of 5p coins

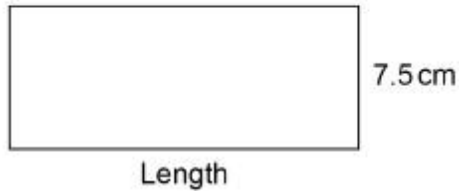
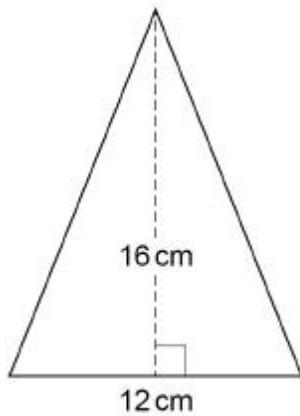
Give your answer in its simplest form.

[illegible]

Answer \_\_\_\_\_ : \_\_\_\_\_  
(Total 4 marks)

**Q26.**

The rectangle and the triangle have the same area.

Not drawn  
accurately

Work out the length of the rectangle.

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Answer \_\_\_\_\_ cm

(Total 3 marks)

**Q27.**

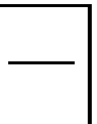
$$m = pr$$

 $p$  is halved and  $r$  is multiplied by 3What happens to  $m$  ?

Circle your answer.

 $\times 6$  $\times \frac{1}{6}$  $\times \frac{3}{2}$  $\times \frac{2}{3}$ 

(Total 1 mark)



Do not write  
outside the  
box

**Q28.**

Harry, Lunna and Ron each have an amount of money.

Harry has £72

Harry amount : Lunna's amount = 6 : 5

Ron's amount is  $1\frac{1}{2}$  times Harry's amount.

Show that, in total, they have **less** than £250

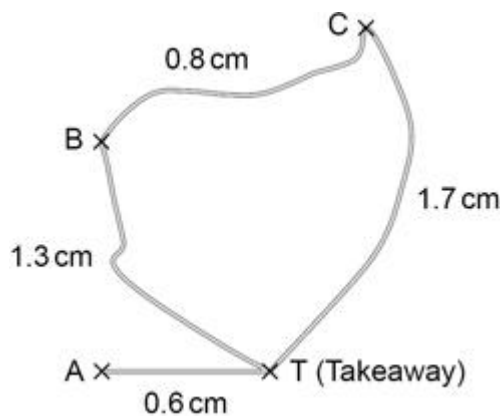
This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

**(Total 3 marks)**

**Q29.**

Des delivers takeaways to houses A, B and C.

**Scale:** 1 cm represents 3 miles



Not drawn  
accurately

## Des drives



from T to A and back  
and  
from T to B, then B to C, then C to T.

Des is paid  
40p for each mile he drives  
and  
£1.35 for each house he delivers to.

How much is Des paid in total for this work?

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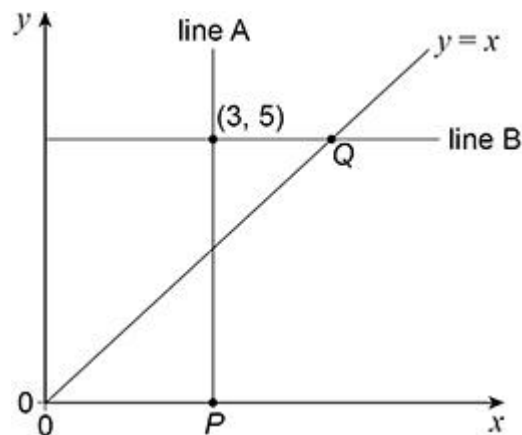
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Answer £ \_\_\_\_\_

(Total 4 marks)

### Q30.

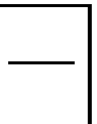
The sketch shows  
the line  $y = x$   
line A, which is vertical  
line B, which is horizontal.  
The point (3, 5) is on both line A and line B.



Write down the coordinates of P and Q.

P ( \_\_\_\_\_ , \_\_\_\_\_ )    Q ( \_\_\_\_\_ , \_\_\_\_\_ )

(Total 2 marks)



**Q31.**

Here is a formula to convert degrees Celsius ( $^{\circ}\text{C}$ ) to degrees Fahrenheit ( $^{\circ}\text{F}$ ).

$$F = 1.8C + 32$$

$F$  is the number of degrees Fahrenheit

$C$  is the number of degrees Celsius

- (a) Show that  $-40^{\circ}\text{C} = -40^{\circ}\text{F}$

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(2)

- (b) The temperature is  $-15^{\circ}\text{C}$

Nick says,

“Because the temperature is negative in Celsius, it **must** be negative in Fahrenheit.”

Is he correct?

You **must** show your working.

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Answer \_\_\_\_\_

(1)

(Total 3 marks)

**Q32.**

A linear sequence starts

11                      21                      31                      41                      ...

Work out an expression for the  $n$ th term of the sequence.

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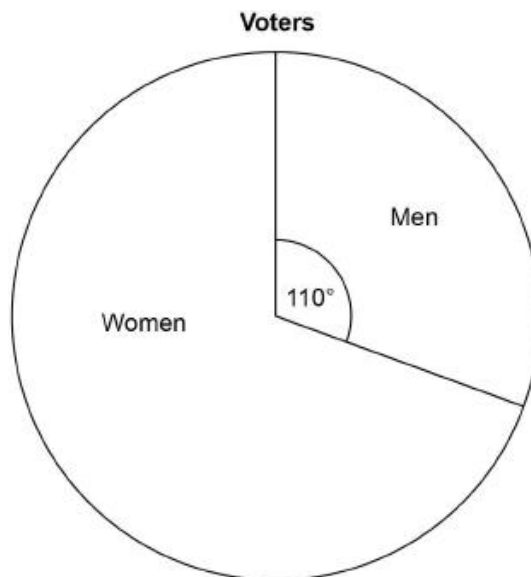


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Answer \_\_\_\_\_

**(Total 2 marks)****Q33.**

The pie chart shows information about voters in an election.

3360 **more** women voted than men.

Work out the total number of voters.

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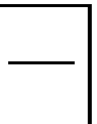


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Answer \_\_\_\_\_

**(Total 3 marks)**

**Q34.** $a$  is a common factor of 72 and 120 $b$  is a common multiple of 6 and 9Work out the highest possible value of  $\frac{a}{b}$ 

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Answer \_\_\_\_\_

**(Total 4 marks)****Q35.**

The first two cube numbers are 1 and 8

Show that

the 3rd cube number can be written as the sum of three different prime numbers.

$$\boxed{\phantom{000}} = \boxed{\phantom{000}} + \boxed{\phantom{000}} + \boxed{\phantom{000}}$$

**(Total 3 marks)**

**Q36.**

Round 1 of voting for Head Student is taking place in a school.

- (a) To reach round 2, a student must receive **at least**  $\frac{4}{15}$  of the votes.  
What is the largest possible number of students that can reach round 2?  
Circle your answer.

15

11

3

4

(1)

- (b) There are 900 votes in round 1  
Mike receives 180 votes.

Amy draws a pie chart to represent the results.

Here is her method to work out the angle needed for Mike.

$180 \div 900 \times 100 = 20$ <p>The angle should be <math>20^\circ</math></p>
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Is Amy's method correct?

Tick a box.

Yes

☐

No

☐

Give a reason for your answer.

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(1)

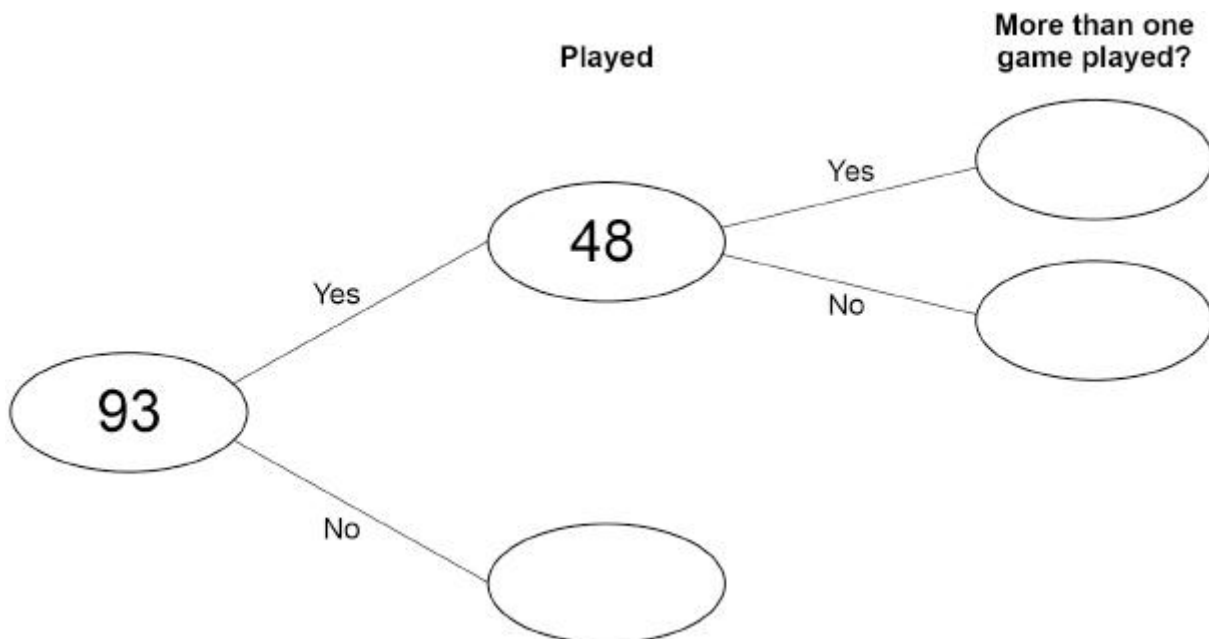
(Total 2 marks)

☐

**Q37.**

93 people were asked if they played online games one day.

The frequency tree shows some information about their answers.



- (a) 75% of the people who answered Yes played one game.

Complete the frequency tree.

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(3)

- (b) One of the 93 people is chosen at random.

P(used social media) is **more than** 0.68

What is the **smallest** possible number of people who used social media?

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Answer \_\_\_\_\_

(2)

(Total 5 marks)

**Q38.**

Ben and Katy throw darts at a target.

Ben's ratio of hits to misses is      5 : 1

Katy's ratio of hits to misses is      3 : 1

Ben says,

"5 is bigger than 3, so I must have more hits than Katy."

Give an example to show that this might **not** be true.

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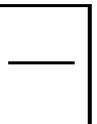
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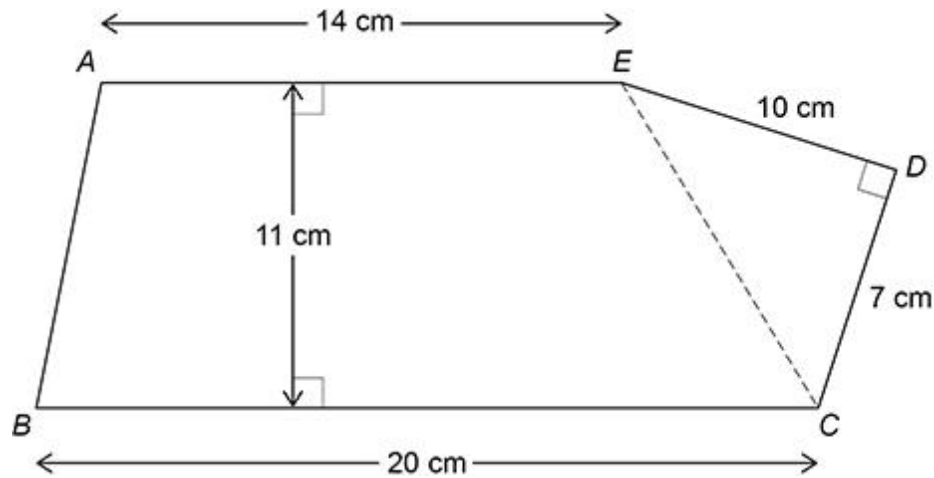
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(Total 2 marks)



**Q39.** $ABCDE$  is a pentagon.Not drawn  
accurately

Work out the area of the pentagon.

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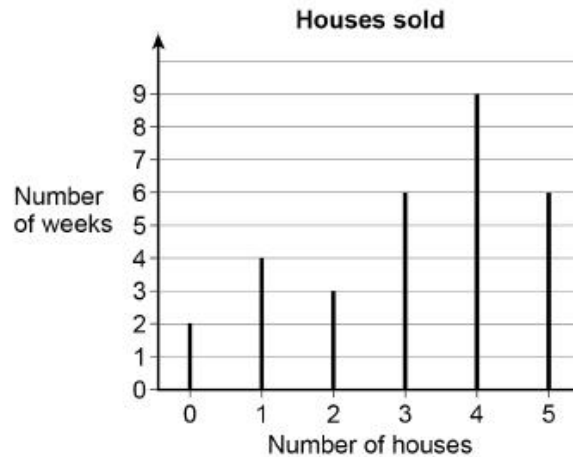
Answer \_\_\_\_\_  $\text{cm}^2$ **(Total 3 marks)**



**Q40.**

A company sells houses.

The line graph shows the number sold per week for 30 weeks.



- (a) Work out the range of the number of houses sold per week.

\_\_\_\_\_

Answer \_\_\_\_\_

(2)

- (b) Work out the median number of houses sold per week.

\_\_\_\_\_

\_\_\_\_\_

Answer \_\_\_\_\_

(2)

- (c) The company sells three houses.

The prices are £185 000, £239 000 and £136 000

The company earns 2% commission on each house.

In total, how much commission does the company earn on these three houses?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Answer £ \_\_\_\_\_

(3)

(Total 7 marks)

**Q41.** $P$  and  $Q$  are points.The  $x$ -coordinate of  $Q$  is 4 **more** than the  $x$ -coordinate of  $P$ .The  $y$ -coordinate of  $Q$  is 5 **less** than the  $y$ -coordinate of  $P$ .Work out the gradient of the straight line through  $P$  and  $Q$ .

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Answer \_\_\_\_\_

**(Total 2 marks)****END OF QUESTIONS**

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