

**Modified Enlarged 24pt**  
**OXFORD CAMBRIDGE AND RSA EXAMINATIONS**

**Monday 11 November 2019 – Afternoon**

**GCSE (9–1) Mathematics**

**J560/03 Paper 3 (Foundation Tier)**

**Time allowed: 1 hour 30 minutes  
plus your additional time allowance**

**YOU MAY USE:**

**a scientific or graphical calculator  
geometrical instruments  
tracing paper**

**Please write clearly in black ink.**

**Centre number**

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**Candidate number**

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**First name(s)** \_\_\_\_\_

**Last name** \_\_\_\_\_

**READ INSTRUCTIONS OVERLEAF**



# **INSTRUCTIONS**

**Use black ink. You may use an HB pencil for graphs and diagrams.**

**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.**

**If additional space is required, use the lined page(s) at the end of this booklet. The question number(s) must be clearly shown.**

## **INFORMATION**

**The total mark for this paper is 100.**

**The marks for each question are shown in brackets [ ].**

**Use the  $\pi$  button on your calculator or take  $\pi$  to be 3.142 unless the question says otherwise.**

**Answer ALL the questions.**

**1 (a) Here are some types of number.**

**An even  
number**

**An odd  
number**

**A prime  
number**

**A square  
number**

**A cube  
number**

**From the list, write down the type of  
number being described.**

**(i) A number that does NOT divide  
exactly by 2.**

\_\_\_\_\_ **[1]**

**(ii) A number that has no factors  
except itself and 1.**

\_\_\_\_\_ **[1]**

**(b) (i) Write down all the multiples of 4 between 21 and 29.**

**(b)(i) \_\_\_\_\_ [1]**

**(ii) Write down a common multiple of 4 and 6.**

**(ii) \_\_\_\_\_ [1]**

**(c) Insert brackets to make this calculation correct.**

$$4 - 1 \times 2 = 6$$

**[1]**

**(d) Write 7% as a fraction.**

**(d) \_\_\_\_\_ [1]**

**2 Work out.**

$$1.52 \text{ kg} + 80 \text{ g}$$

**Give your answer in kilograms.**

\_\_\_\_\_ kg [2]

**3 (a) Round 32 629 to the nearest thousand.**

**(a) \_\_\_\_\_ [1]**

**(b) Round 32 629 to 1 significant figure.**

**(b) \_\_\_\_\_ [1]**



**4 A circle has radius 5 cm.**

**(a) Work out the circumference of the circle.**

**(a) \_\_\_\_\_ cm [2]**

**(b) Work out the area of the circle.**

**(b) \_\_\_\_\_ cm<sup>2</sup> [2]**

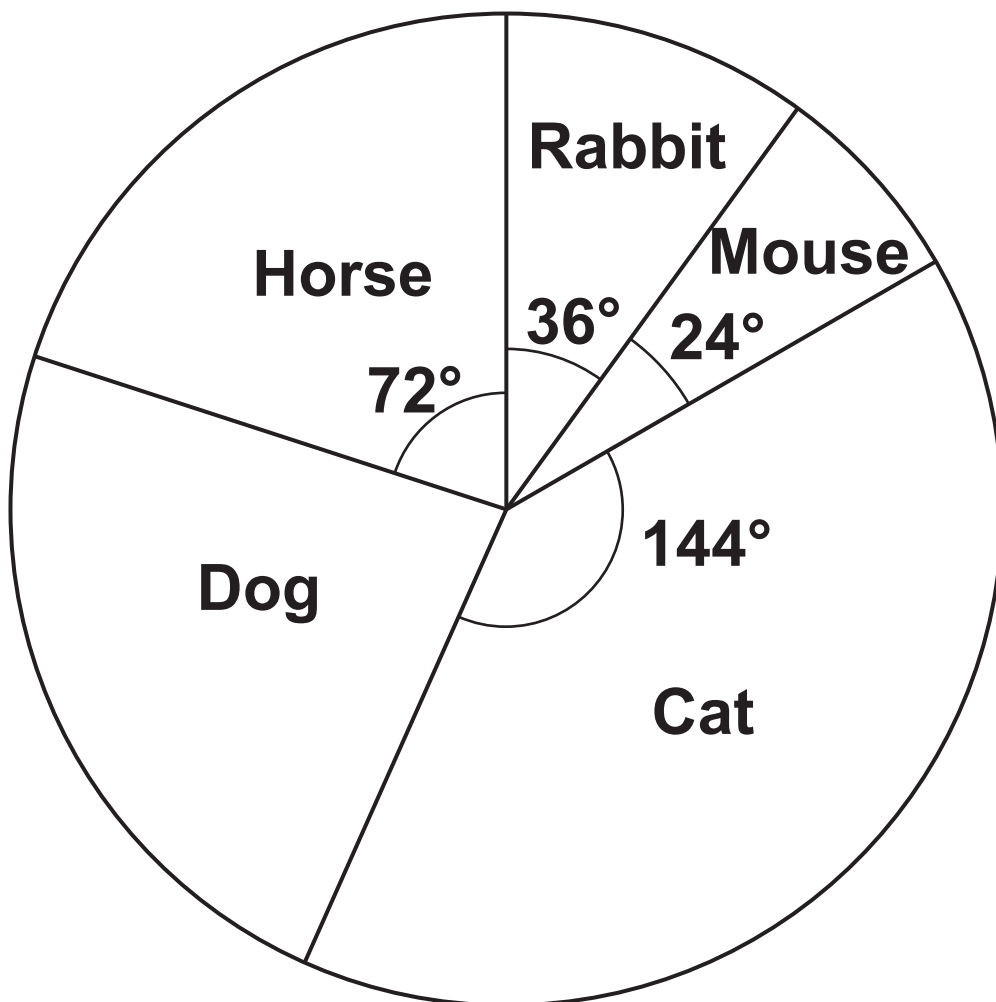
- 5 Dan thinks of a number.  
He adds 3 and divides the result by 2.  
His answer is 16.**

**What number is Dan thinking of?**

\_\_\_\_\_ **[2]**

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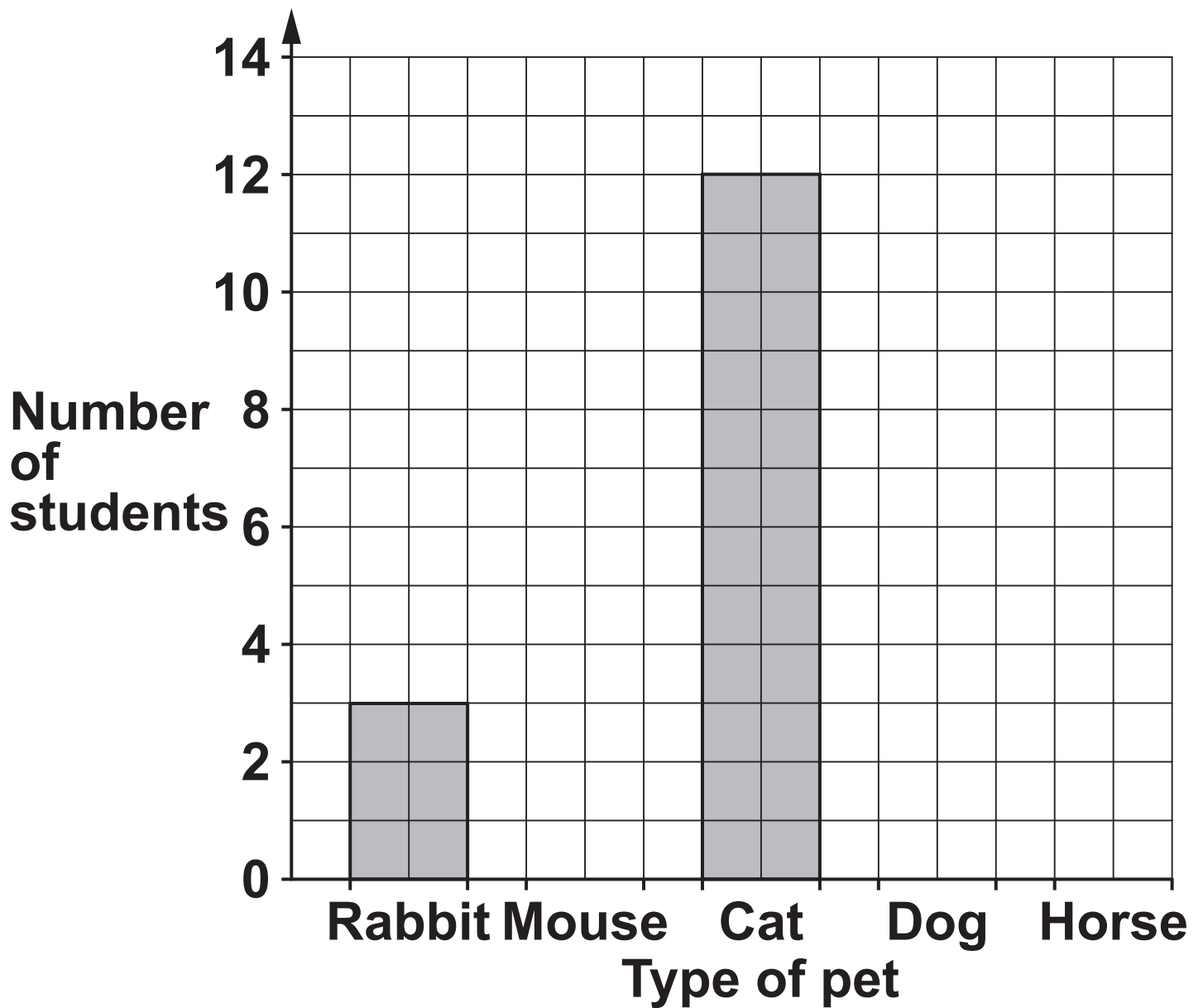
- 6 30 students each own one pet.  
The pie chart shows the proportion of each type of pet owned by the 30 students.



(a) Which type of pet is the mode?

(a) \_\_\_\_\_ [1]

**(b) Use the information in the pie chart to complete this bar chart. [3]**



- 7 Jenny has a five-sided BIASED spinner. The sectors are coloured red, blue, green, yellow and white. She spins the spinner 100 times.**

**The table shows the number of times the spinner lands on each colour.**

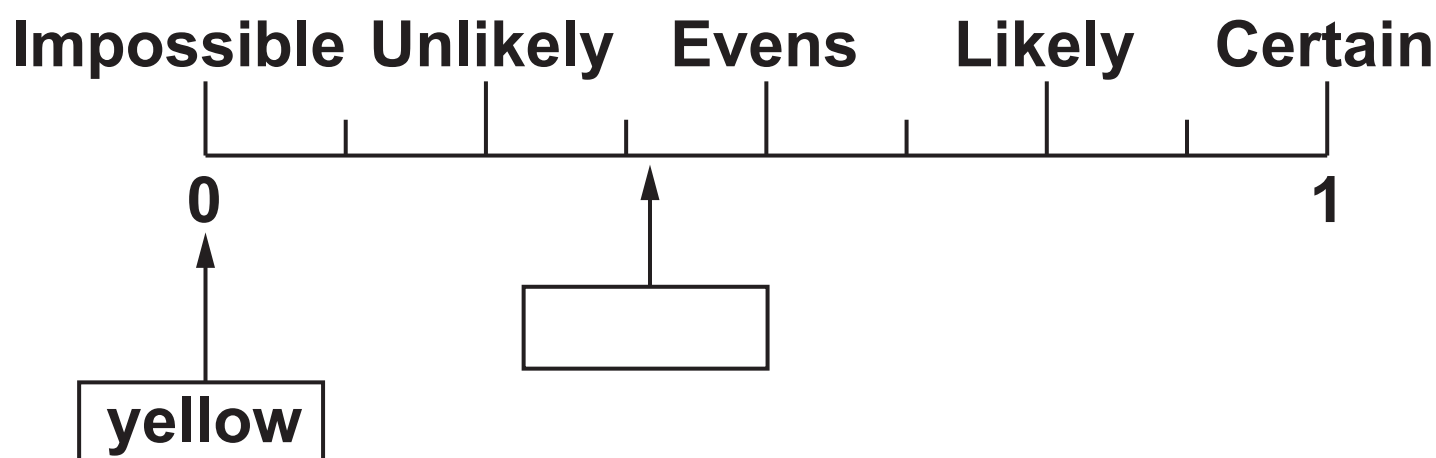
<b>Colour</b>	<b>Frequency</b>
<b>Red</b>	<b>28</b>
<b>Blue</b>	<b>38</b>
<b>Green</b>	<b>6</b>
<b>Yellow</b>	<b>0</b>
<b>White</b>	<b>28</b>
<b>Total</b>	<b>100</b>

**Jenny uses her data to estimate the probability of the spinner landing on each colour.**

- (a) Write down Jenny's estimate for the probability of landing on red.**

**(a) \_\_\_\_\_ [1]**

**(b) Jenny then writes in some of the colours on this probability scale.**



**(i) Write the correct colour in the box. [1]**

**(ii) Explain why Jenny's estimate for the probability of landing on yellow cannot be the actual probability.**

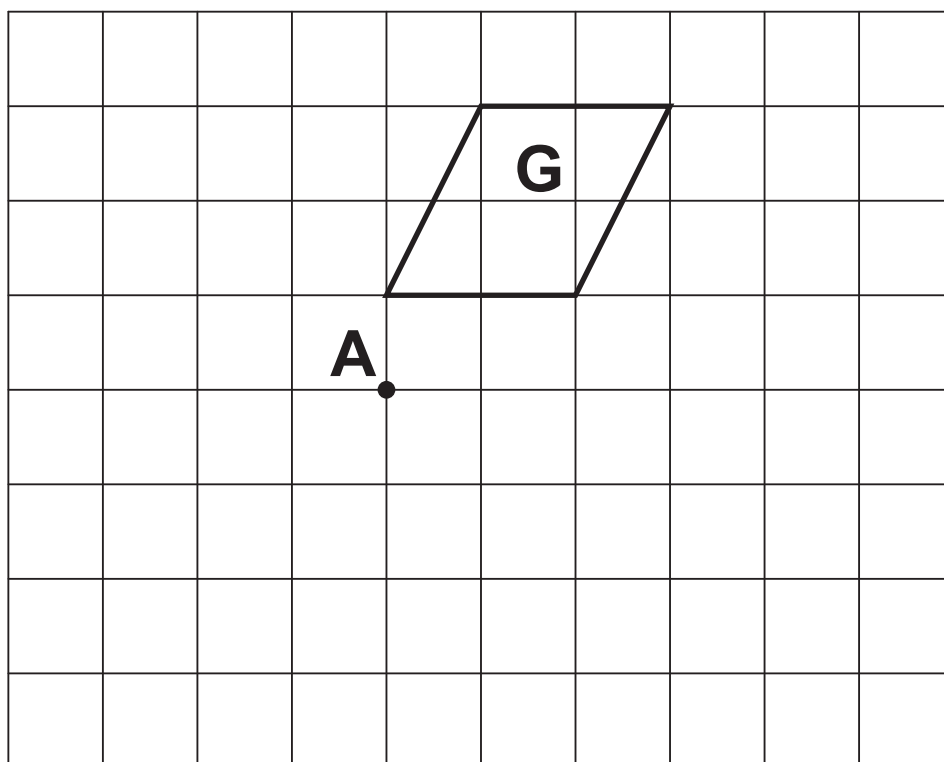
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[1]

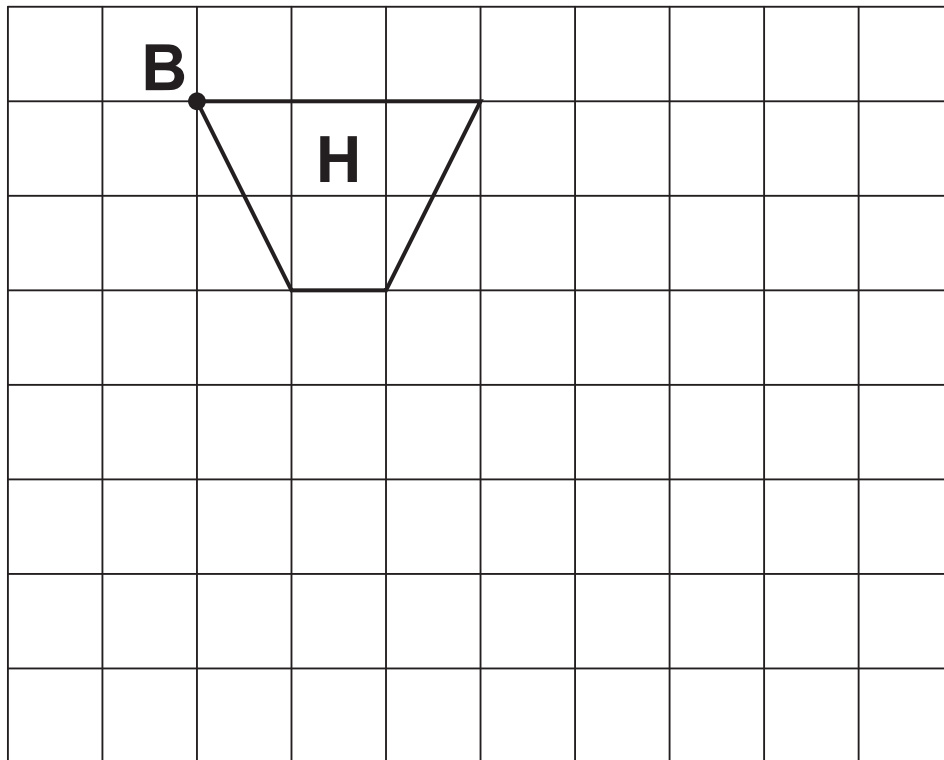
**8 (a) Shape G is drawn on the grid.**



**Rotate shape G by  $180^\circ$  about the point A. [2]**



**(b) Shape H is drawn on the grid.**



**Enlarge shape H with scale factor 2 and the centre of enlargement at point B. [2]**

- 9 Tom buys a radio for £40.  
Later he sells it and makes a profit of 20%.**

**Tom says**

**The ratio of the price I paid for the radio to the price I sold the radio is 5 : 6.**

**Show that Tom is correct. Use the space below [3]**

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**10 Nada is planning the colour scheme for her bedroom.**

**The colour of her carpet can be blue (B), grey (G) or red (R).**

**The walls can be painted yellow (Y), white (W) or pink (P).**

**(a) Complete the table to show all of the possible colour combinations she can make.**

**You may not need all the rows. [2]**

<b>CARPET</b>	<b>WALLS</b>
<b>B</b>	<b>Y</b>

**(b) Explain why it would NOT be mathematically correct to find the probability that Nada decides on a grey carpet and pink walls using this formula.**

**1**

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**the total number of colour combinations**

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**[1]**

## 11 Multiply out.

(a)  $3(x - 2)$

(a) \_\_\_\_\_ [1]

(b)  $2a(a + b)$

(b) \_\_\_\_\_ [2]

**12 (a) Find the value of**

**(i)  $\sqrt[3]{216}$ ,**

**(a)(i) \_\_\_\_\_ [1]**

**(ii)  $2^8$ .**

**(ii) \_\_\_\_\_ [1]**

**(b) The cube of 3 is added to the square root of 7.**

**Put a ring around the correct statement. [1]**

$$\sqrt[3]{3} + 7^2$$

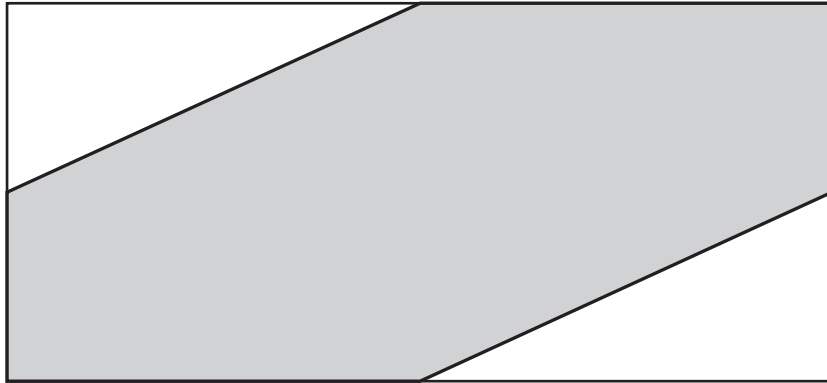
$$3^3 + 7^2$$

$$3^3 + \sqrt{7}$$

$$\sqrt[3]{3} + \sqrt{7}$$



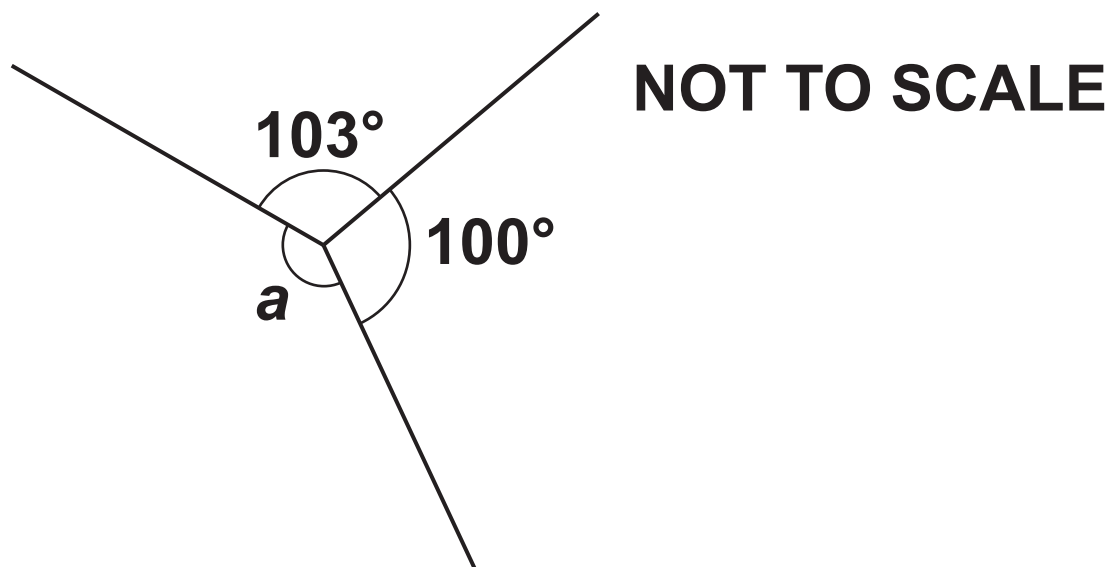
- 13 The midpoints of the sides of a rectangle are joined by straight lines as shown.**



**Work out the percentage of the rectangle that is shaded.**

\_\_\_\_\_ % [4]

14 (a) Three lines meet at a point.

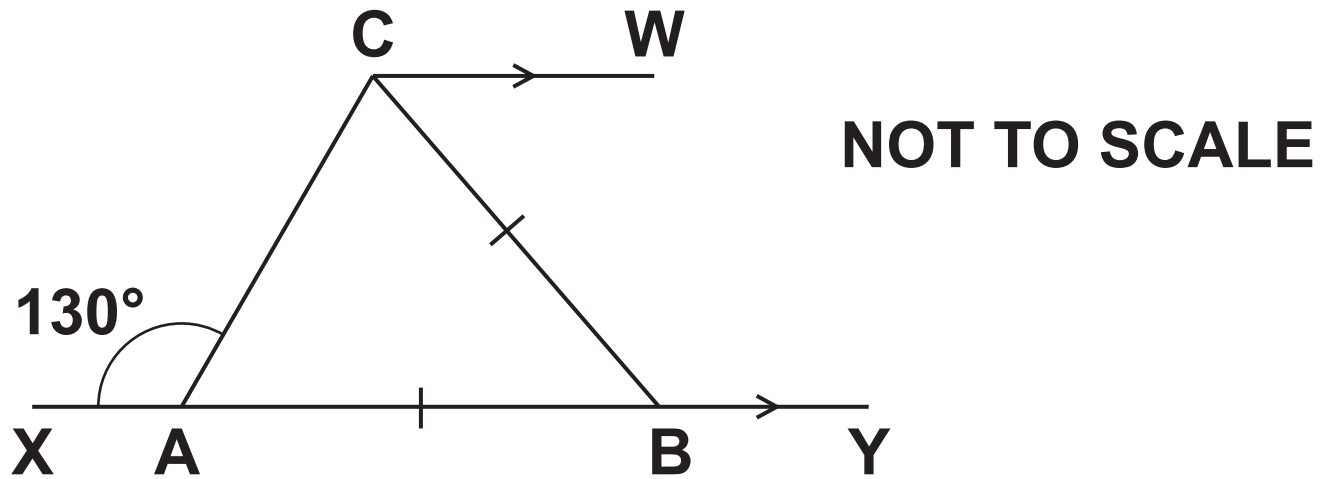


Work out the size of angle  $a$ .

(a)  $a =$  \_\_\_\_\_  $^\circ$  [2]

27

- (b) XY and CW are parallel lines.  
 $AB = CB$ .  
Angle  $CAX = 130^\circ$ .



- (i) Complete this sentence.

Angle  $CAB = 50^\circ$  because

\_\_\_\_\_

\_\_\_\_\_ [1]

**(ii) Work out angle BCW.  
Give a reason for each angle you  
work out.**

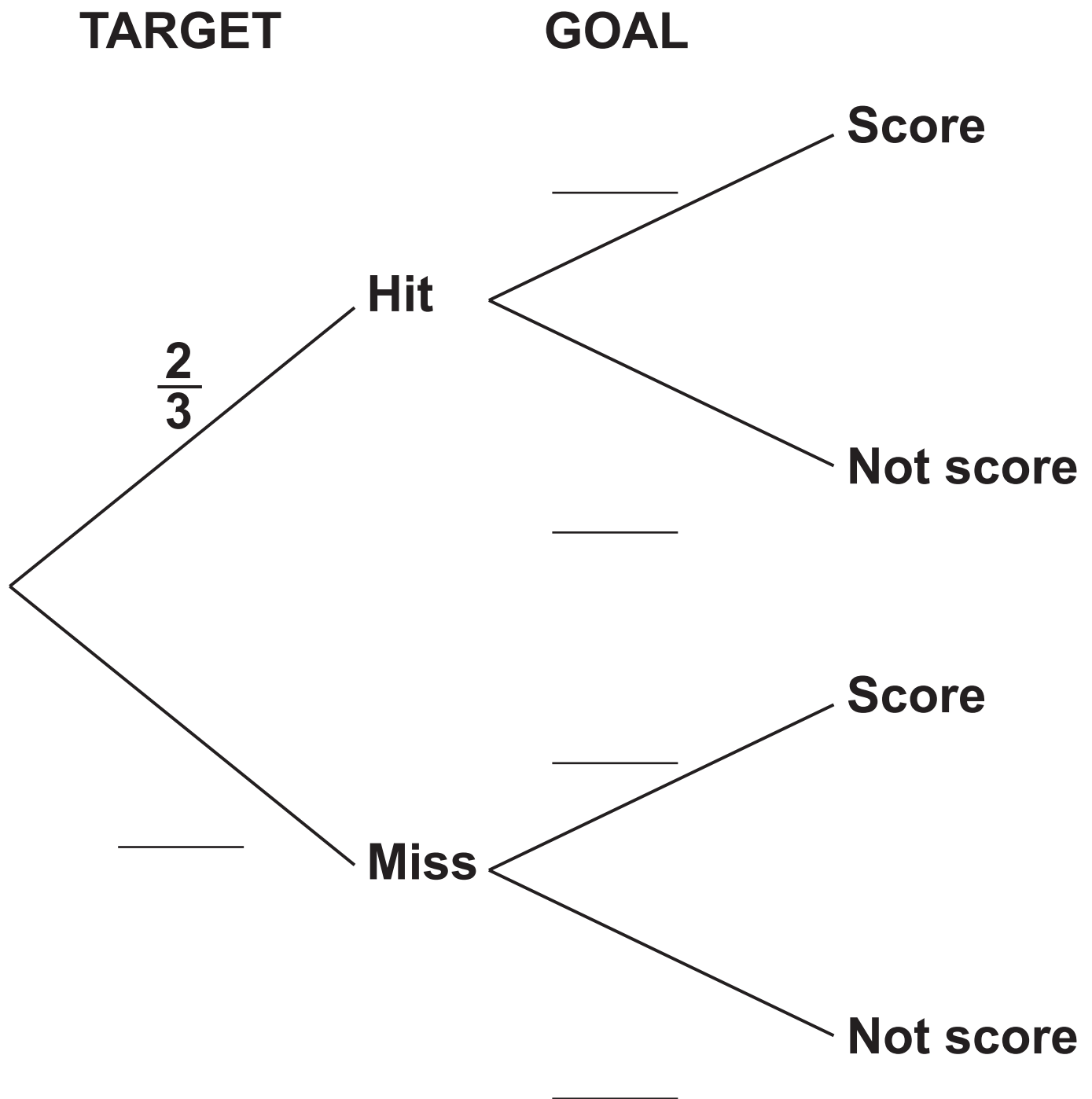
**(b)(ii) \_\_\_\_\_ ° [4]**

**15 Ryan shoots an arrow at a target. He then kicks a ball at a goal.**

**The probability that Ryan hits the target is  $\frac{2}{3}$ .**

**The probability that Ryan scores a goal is  $\frac{3}{5}$ .**

(a) Complete the tree diagram. [2]



**(b) Find the probability that Ryan**

**(i) misses the target and does not  
score a goal,**

**(b)(i) \_\_\_\_\_ [2]**



**(ii) either hits the target or scores a goal or both.**

**(ii) \_\_\_\_\_ [2]**

**16 Solve the simultaneous equations.**

$$2x - y = 7$$

$$2x + y = 5$$

$$x = \underline{\hspace{4cm}}$$

$$y = \underline{\hspace{4cm}} \quad [3]$$

- 17 Two model cars, A and B, are in a race. They start together on the starting line. Assume each car travels at a constant speed.**

**Car A takes 30 seconds to complete each lap of the track.**

**Car B takes a whole number of seconds to complete each lap of the track.**

**The two cars next cross the starting line together 150 seconds after the start of the race.**

**Find the FOUR possible times that car B could take to complete one lap.**

**You may find this information helpful.**

$$150 = 2 \times 3 \times 5 \times 5$$

$$30 = 2 \times 3 \times 5$$

\_\_\_\_\_ seconds [5]

- 18 (a) Write down the multiplier for an increase of 140%.  
Give your answer as a decimal.**

**(a) \_\_\_\_\_ [1]**

- (b) Ali invests £1500 in October.  
The investment increases in value by 10% in November.  
It then decreases in value by 20% in December.**

**Ali says**

**$10\% - 20\% = -10\%$ , so the  
£1500 has lost exactly 10% of  
its value.**

- (i) Explain what Ali has done wrong.**

\_\_\_\_\_  
\_\_\_\_\_ **[1]**

**(ii) Work out the correct percentage loss.**

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**% [5]**

**19 Solve  $3x - 5 \geq 10$ .**

**Show your solution on the number line. [4]**





**20 Amrit's income is 32% more than Bethan's income.  
Amrit and Bethan's combined income is £54 868.**

**Calculate Amrit's income.**

**£ \_\_\_\_\_ [5]**

**21 Jacob, Amelie and Reuben each roll a fair six-sided dice.  
What is the probability that all three roll a number less than 3?**

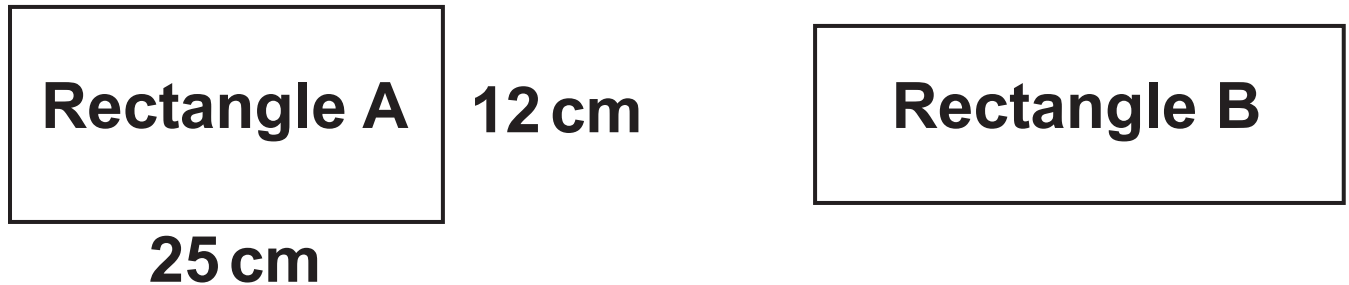
**Give your answer as a fraction in its simplest form.**

\_\_\_\_\_ **[3]**

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**22 The diagram shows two rectangles, A and B.**

**NOT TO SCALE**



**Rectangle A has a width of 25 cm and a height of 12 cm.**

**The width of rectangle B is three times the height of rectangle B.**

**The area of rectangle A is equal to the area of rectangle B.**

**Find the perimeter of rectangle B.**

\_\_\_\_\_ cm [5]

**23 Kay invests £1500 in an account paying 3% COMPOUND interest per year.  
Neil invests £1500 in an account paying  $r\%$  SIMPLE interest per year.**

**At the end of the 5th year, Kay and Neil's accounts both contain the same amount of money.**

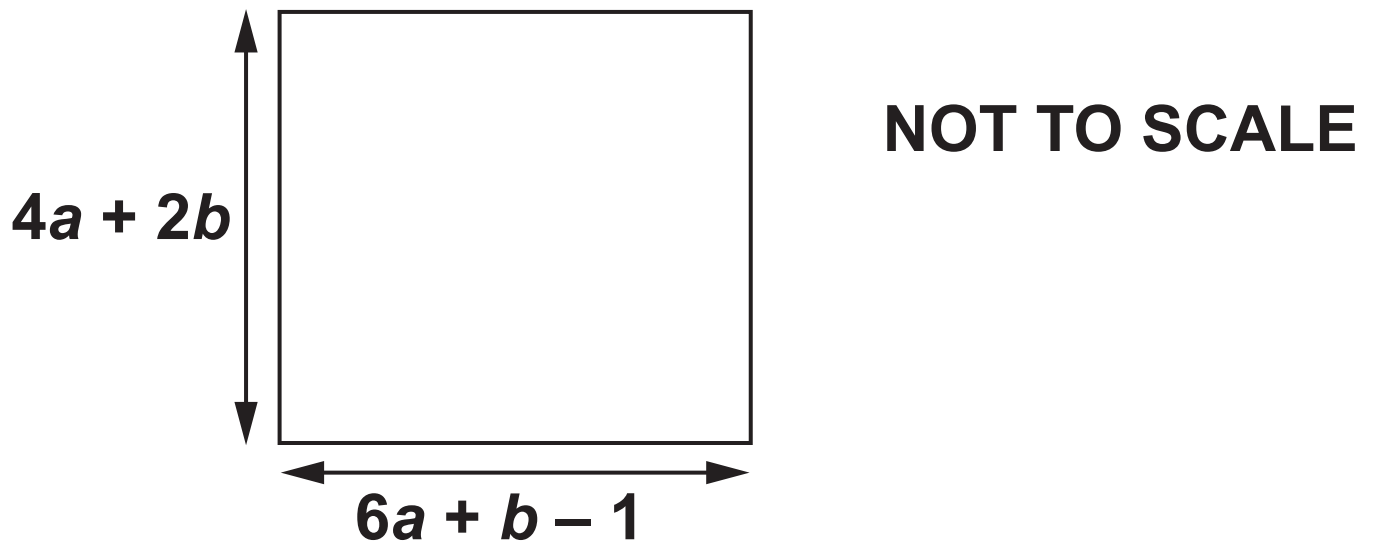
**Calculate  $r$ .**

**Give your answer correct to 1 decimal place.**

$$r = \underline{\hspace{10em}} [6]$$

**24 In this question, all lengths are in centimetres.**

**Here is a square.**



**Find the length of one side of the square when  $b = 4$ .**



\_\_\_\_\_ cm [6]

**END OF QUESTION PAPER**

**ADDITIONAL ANSWER SPACE**

**If additional space is required, you should use the following lined page(s). The question number(s) must be clearly shown in the margin(s).**


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