

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

**Answer ALL TWENTY SIX questions.**

**Write your answers in the spaces provided.**

**You must write down all the stages in your working.**

- 1** The probability that a spinner will land on blue is 0.4

Rayyan is going to spin the spinner 280 times.

Work out an estimate for the number of times the spinner will land on blue.

.....

**(Total for Question 1 is 2 marks)**

- 2** Write 880 as a product of powers of its prime factors.  
Show your working clearly.

.....

**(Total for Question 2 is 3 marks)**



3 (a) Write  $2.46 \times 10^6$  as an ordinary number.

.....  
(1)

(b) Write 0.000 74 in standard form.

.....  
(1)

(c) Work out  $(5.6 \times 10^6) + (2.3 \times 10^5)$

.....  
(2)

**(Total for Question 3 is 4 marks)**

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



- 4 Alexa has five cards.  
Each card has a number on it.

The table gives information about the numbers on the five cards.

Total	Median	Mode	Range
45	8	5	10

Using the information in the table, complete each card by writing its number on it.

(Total for Question 4 is 3 marks)

- 5 The length of a book is 33.8 cm, correct to one decimal place.

(a) Write down the lower bound of the length of the book.

..... cm  
(1)

(b) Write down the upper bound of the length of the book.

..... cm  
(1)

(Total for Question 5 is 2 marks)



6 Nav has worked out  $\frac{68.3 \times 42.8}{0.021}$  on his calculator.

His answer is 139201.9048

Without using a calculator and using suitable approximations, check that his answer is sensible.  
Show your working clearly.

(Total for Question 6 is 2 marks)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

- 7 Markus makes a steel framework.  
The framework is in the shape of the right-angled triangle  $ABC$  shown in the diagram.

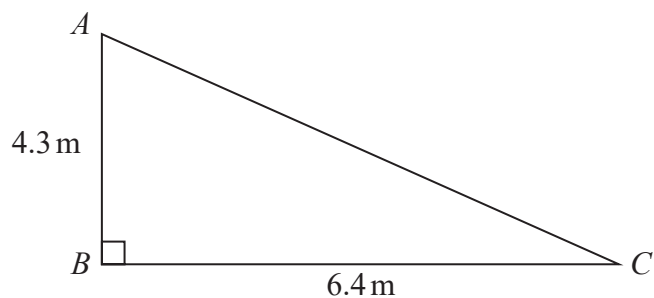


Diagram **NOT**  
accurately drawn

The steel that Markus uses costs \$22 per metre.  
The steel can **only** be bought in a length that is a whole number of metres.

Work out the total cost of the steel that Markus buys in order to make the framework.

\$.....

(Total for Question 7 is 4 marks)



8 Alison buys 2 boxes of strawberries, box **A** and box **B**.

Box **A** contains 15 strawberries.

The strawberries in box **A** have a mean weight of 24 grams.

Box **B** contains 25 strawberries.

The strawberries in box **B** have a mean weight of 18 grams.

Alison puts all 40 strawberries into a bowl.

Work out the mean weight of the 40 strawberries.

..... grams

**(Total for Question 8 is 3 marks)**



9 (a) Factorise  $x^2 - x - 42$

.....  
(2)

(b) Solve the inequality  $3x + 15 < 8x + 3$

Show clear algebraic working.

.....  
(3)

(Total for Question 9 is 5 marks)

10 Given that  $150^x = 1$

(a) write down the value of  $x$ .

$x =$ .....  
(1)

Given that  $3^{-8} \div 3^{-6} = 3^n$

(b) find the value of  $n$ .

$n =$ .....  
(1)

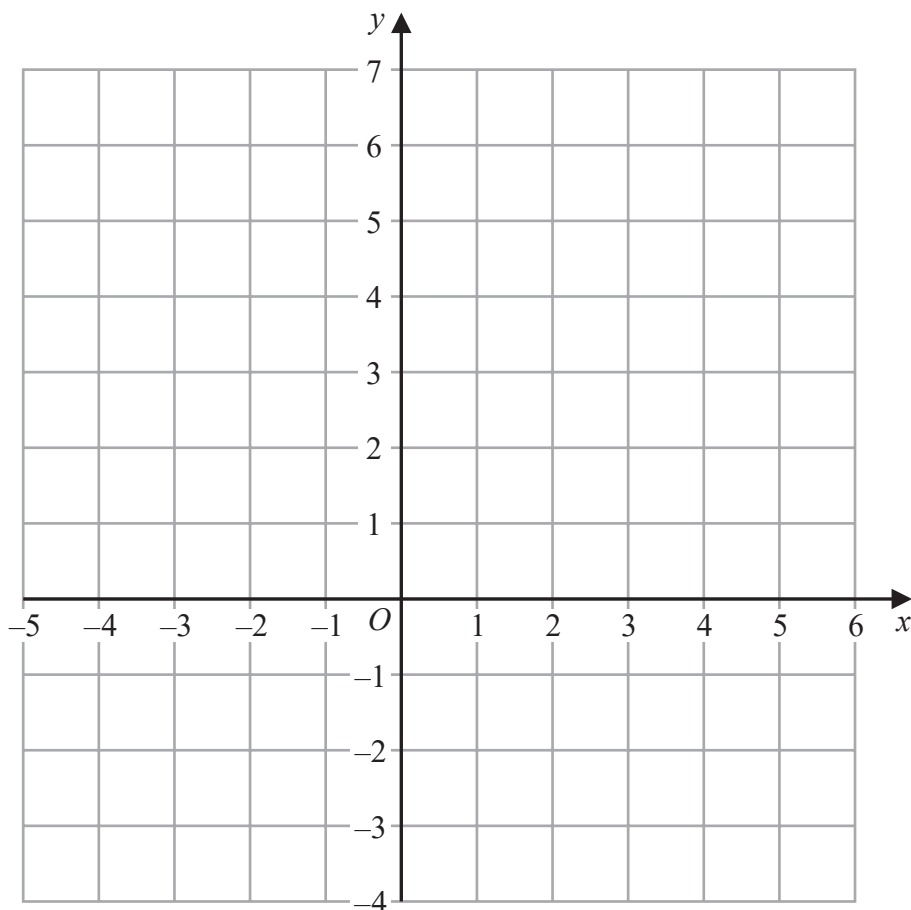
(Total for Question 10 is 2 marks)



11 Show, by shading on the grid, the region that satisfies all three of the inequalities

$$x \leq 4 \quad \text{and} \quad y \geq -2 \quad \text{and} \quad y \leq x$$

Label the region **R**.



(Total for Question 11 is 3 marks)

12 Find the gradient of the straight line with equation  $5x + 2y = 7$

(Total for Question 12 is 2 marks)





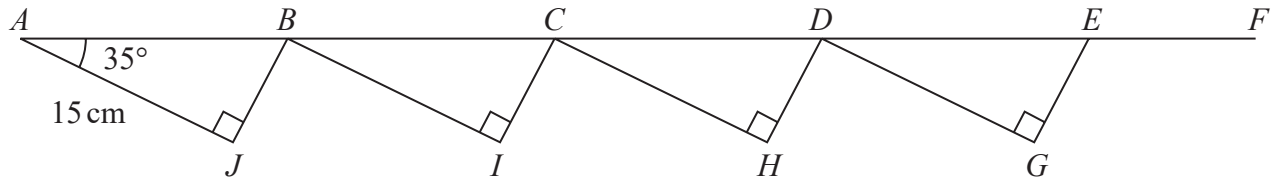
DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

13 The diagram shows four congruent right-angled triangles  $ABJ$ ,  $BCI$ ,  $CDH$  and  $DEG$ .  
The diagram also shows the straight line  $ABCDEF$ .

Diagram NOT accurately drawn



$AJ = 15 \text{ cm}$   
Angle  $BAJ = 35^\circ$

$AF = 80 \text{ cm}$

Work out the length of  $EF$ .  
Give your answer correct to 3 significant figures.

..... cm

(Total for Question 13 is 5 marks)

