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Answer ALL TWENTY THREE questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 A plane has a length of 73 metres.

A scale model is made of the plane.

The scale of the model is 1 : 200

Work out the length of the scale model.

Give your answer in centimetres.

cm

(Total for Question 1 is 3 marks)

2 Here are the first five terms of an arithmetic sequence.

7 11 15 19 23

Write down an expression, in terms of n , for the n th term of this sequence.

(Total for Question 2 is 2 marks)



- 3 There are 90 counters in a bag.
Each counter in the bag is either red or blue so that

the number of red counters : the number of blue counters = 2 : 13

Li is going to put some more red counters in the bag so that

the probability of taking at random a red counter from the bag is $\frac{1}{3}$

Work out the number of red counters that Li is going to put in the bag.

(Total for Question 3 is 4 marks)

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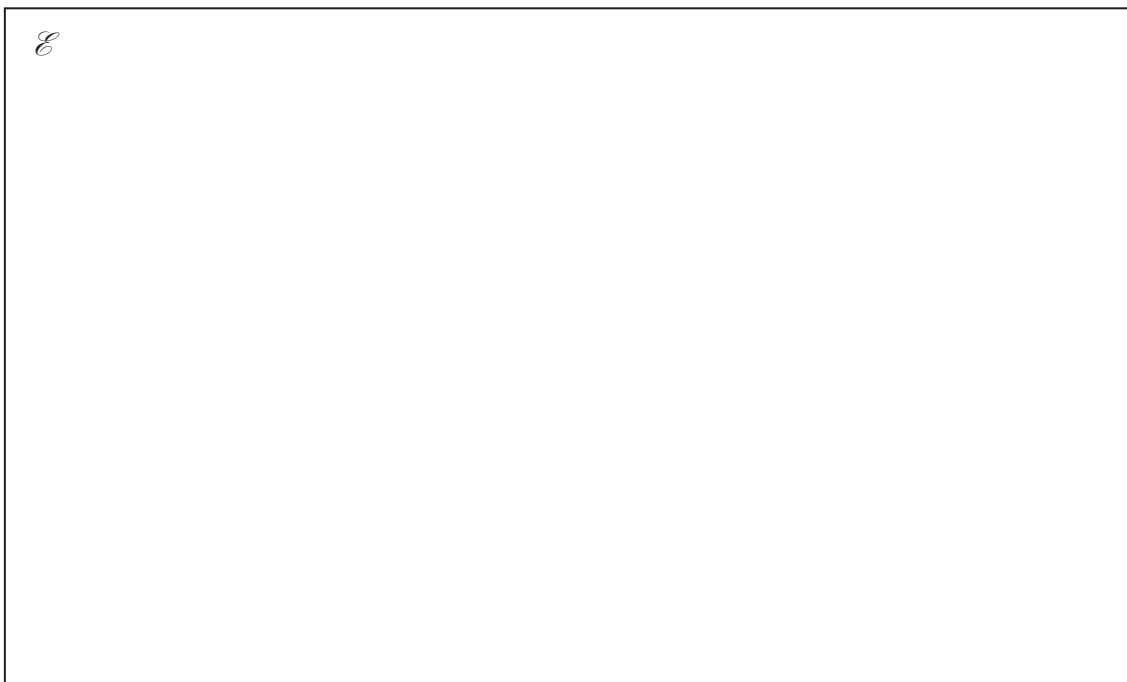
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- 4 $\mathcal{E} = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12\}$
 $A = \{\text{odd numbers}\}$
 $A \cap B = \{1, 3\}$
 $A \cup B = \{1, 2, 3, 4, 5, 6, 7, 9, 11, 12\}$

Draw a Venn diagram to show this information.



(Total for Question 4 is 4 marks)



- 5 Calvin has 12 identical rectangular tiles. He arranges the tiles to fit exactly round the edge of a shaded rectangle, as shown in the diagram below.

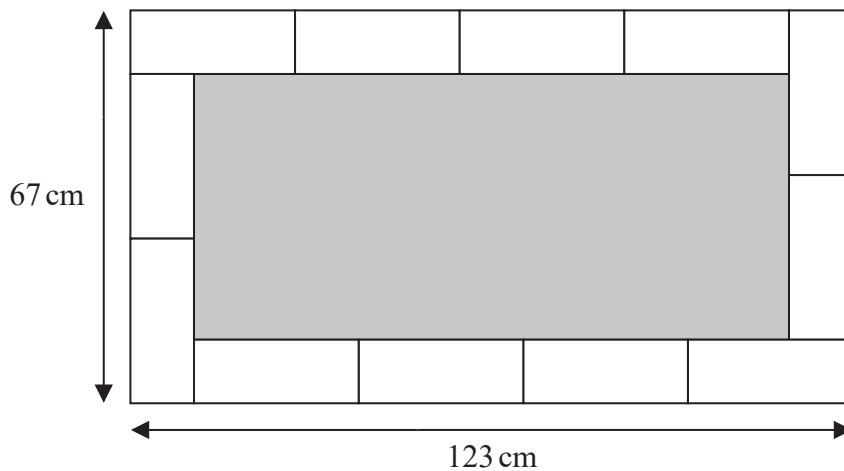


Diagram **NOT** accurately drawn

Work out the area of the shaded rectangle.

cm²

(Total for Question 5 is 5 marks)

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6 (a) Find the highest common factor (HCF) of 96 and 120

(2)

$$A = 2^3 \times 5 \times 7^2 \times 11$$

$$B = 2^4 \times 7 \times 11$$

$$C = 3 \times 5^2$$

(b) Find the lowest common multiple (LCM) of A , B and C .

(2)

(Total for Question 6 is 4 marks)



7 Jenny invests \$8500 for 3 years in a savings account. She gets 2.3% per year compound interest.

- (a) How much money will Jenny have in her savings account at the end of 3 years? Give your answer correct to the nearest dollar.

\$ (3)

Rami bought a house on 1st January 2015

In 2015, the house increased in value by 15%

In 2016, the house decreased in value by 8%

On 1st January 2017, the value of the house was \$687 700

- (b) What was the value of the house on 1st January 2015?

\$ (3)

(Total for Question 7 is 6 marks)



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8 A block of wood has a mass of 3.5 kg.
The wood has density 0.65 kg/m^3

(a) Work out the volume of the block of wood.
Give your answer correct to 3 significant figures.

(3) m^3

(b) Change a speed of 630 kilometres per hour to a speed in metres per second.

(3) m/s

(Total for Question 8 is 6 marks)



9 Solve the simultaneous equations

$$4x + 5y = 4$$

$$2x - y = 9$$

Show clear algebraic working.

$$x =$$

$$y =$$

(Total for Question 9 is 3 marks)

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