

Answer ALL TWENTY questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 (a) Simplify  $e^8 \div e^2$

.....  
(1)

(b) Expand and simplify  $(x - 3)(x + 1)$

.....  
(2)

(Total for Question 1 is 3 marks)

2 Here is a right-angled triangle.

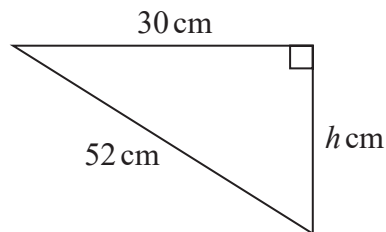


Diagram NOT  
accurately drawn

Calculate the value of  $h$ .  
Give your answer correct to 3 significant figures.

$h =$  .....

(Total for Question 2 is 3 marks)



- 3 There are 54 fish in a tank.  
Some of the fish are white and the rest of the fish are red.

Jeevan takes at random a fish from the tank.

The probability that he takes a white fish is  $\frac{4}{9}$

- (a) Work out the number of white fish originally in the tank.

.....  
(2)

Jeevan puts the fish he took out, back into the tank.  
He puts some more white fish into the tank.

Jeevan takes at random a fish from the tank.

The probability that he takes a white fish is now  $\frac{1}{2}$

- (b) Work out the number of white fish Jeevan put into the tank.

.....  
(2)

(Total for Question 3 is 4 marks)



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4 The diagram shows the front of a wooden door with a semicircular glass window.

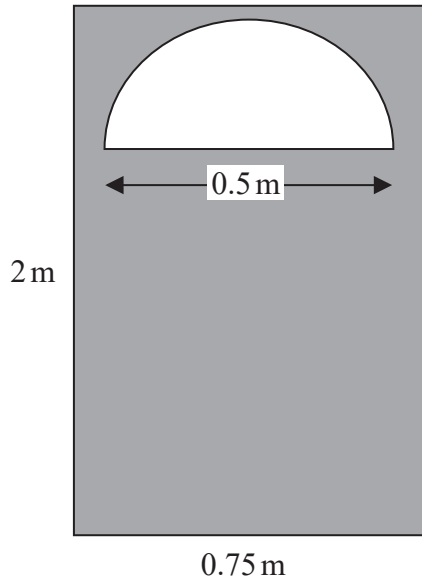


Diagram **NOT** accurately drawn

Julie wants to apply 2 coats of wood varnish to the front of the door, shown shaded in the diagram.

250 millilitres of wood varnish covers  $4\text{ m}^2$  of the wood.

Work out how many millilitres of wood varnish Julie will need.  
Give your answer correct to the nearest millilitre.

..... millilitres

(Total for Question 4 is 5 marks)



- 5 Yasmin has some identical rectangular tiles.  
Each tile is  $L$  cm by  $W$  cm.

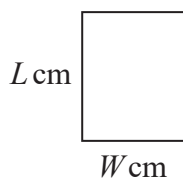


Diagram **NOT**  
accurately drawn

Using 9 of her tiles, Yasmin makes rectangle  $ABCD$ , shown in the diagram below.

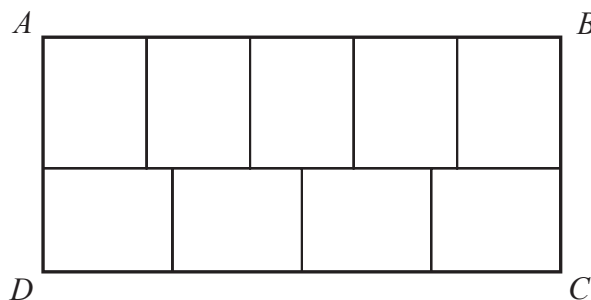


Diagram **NOT**  
accurately drawn

The area of  $ABCD$  is  $1620 \text{ cm}^2$

Work out the value of  $L$  and the value of  $W$ .

$$L = \dots\dots\dots W = \dots\dots\dots$$

(Total for Question 5 is 5 marks)

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- 6 Alison buys 5 apples and 3 pears for a total cost of \$1.96  
Greg buys 3 apples and 2 pears for a total cost of \$1.22

Michael buys 10 apples and 10 pears.

Work out how much Michael pays for his 10 apples and 10 pears.  
Show your working clearly.

\$.....

**(Total for Question 6 is 5 marks)**

- 7 Write  $3.6 \times 10^3$  as a product of powers of its prime factors.  
Show your working clearly.

.....

**(Total for Question 7 is 3 marks)**



- 8 In 2018, the population of Sydney was 5.48 million.  
This was 22% of the total population of Australia.

Work out the total population of Australia in 2018  
Give your answer correct to 3 significant figures.

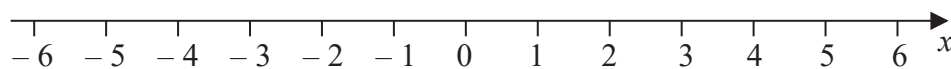
..... million

(Total for Question 8 is 3 marks)

- 9 (i) Solve the inequalities  $-7 \leq 2x - 3 < 5$

.....  
(3)

- (ii) On the number line, represent the solution set to part (i)



(2)

(Total for Question 9 is 5 marks)



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10 A solid aluminium cylinder has radius 10 cm and height  $h$  cm.

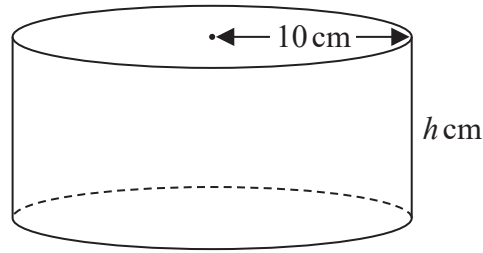


Diagram **NOT** accurately drawn

The mass of the cylinder is 5.4 kg.  
The density of aluminium is  $0.0027 \text{ kg/cm}^3$

Calculate the value of  $h$ .  
Give your answer correct to one decimal place.

$h = \dots\dots\dots$

(Total for Question 10 is 5 marks)



P 6 5 9 1 5 R A 0 9 2 4