

8 The diagram shows an isosceles triangle.

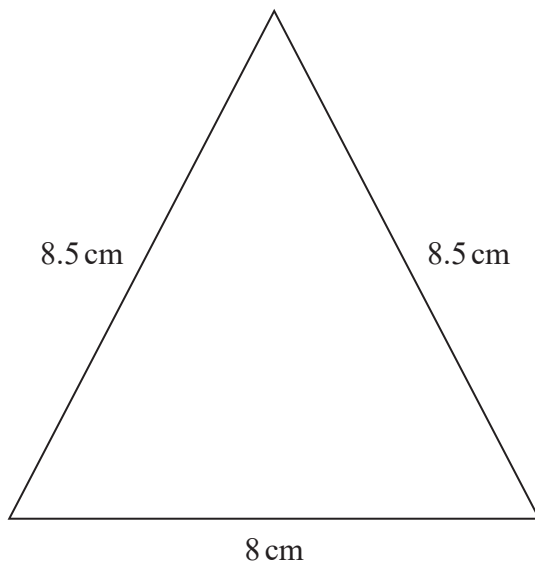


Diagram **NOT** accurately drawn

Work out the area of the triangle.

.....cm<sup>2</sup>

(Total for Question 8 is 4 marks)



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9 The diagram shows a solid cylinder with radius 3 m.

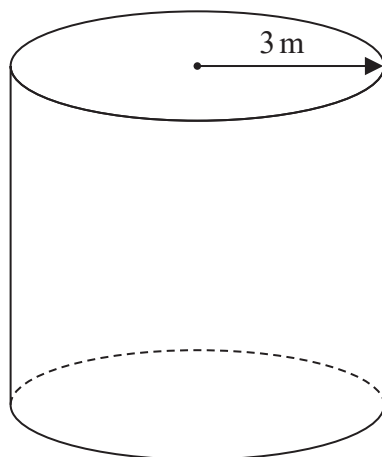


Diagram **NOT** accurately drawn

The volume of the cylinder is  $72\pi \text{ m}^3$

Calculate the **total** surface area of the cylinder.  
Give your answer correct to 3 significant figures.

.....m<sup>2</sup>

(Total for Question 9 is 5 marks)



10 The table shows information about the number of minutes each of 120 buses was late last Monday.

Number of minutes late ( $L$ )	Frequency
$0 < L \leq 10$	10
$10 < L \leq 20$	16
$20 < L \leq 30$	44
$30 < L \leq 40$	29
$40 < L \leq 50$	15
$50 < L \leq 60$	6

(a) Complete the cumulative frequency table below.

Number of minutes late ( $L$ )	Cumulative frequency
$0 < L \leq 10$	
$0 < L \leq 20$	
$0 < L \leq 30$	
$0 < L \leq 40$	
$0 < L \leq 50$	
$0 < L \leq 60$	

(1)

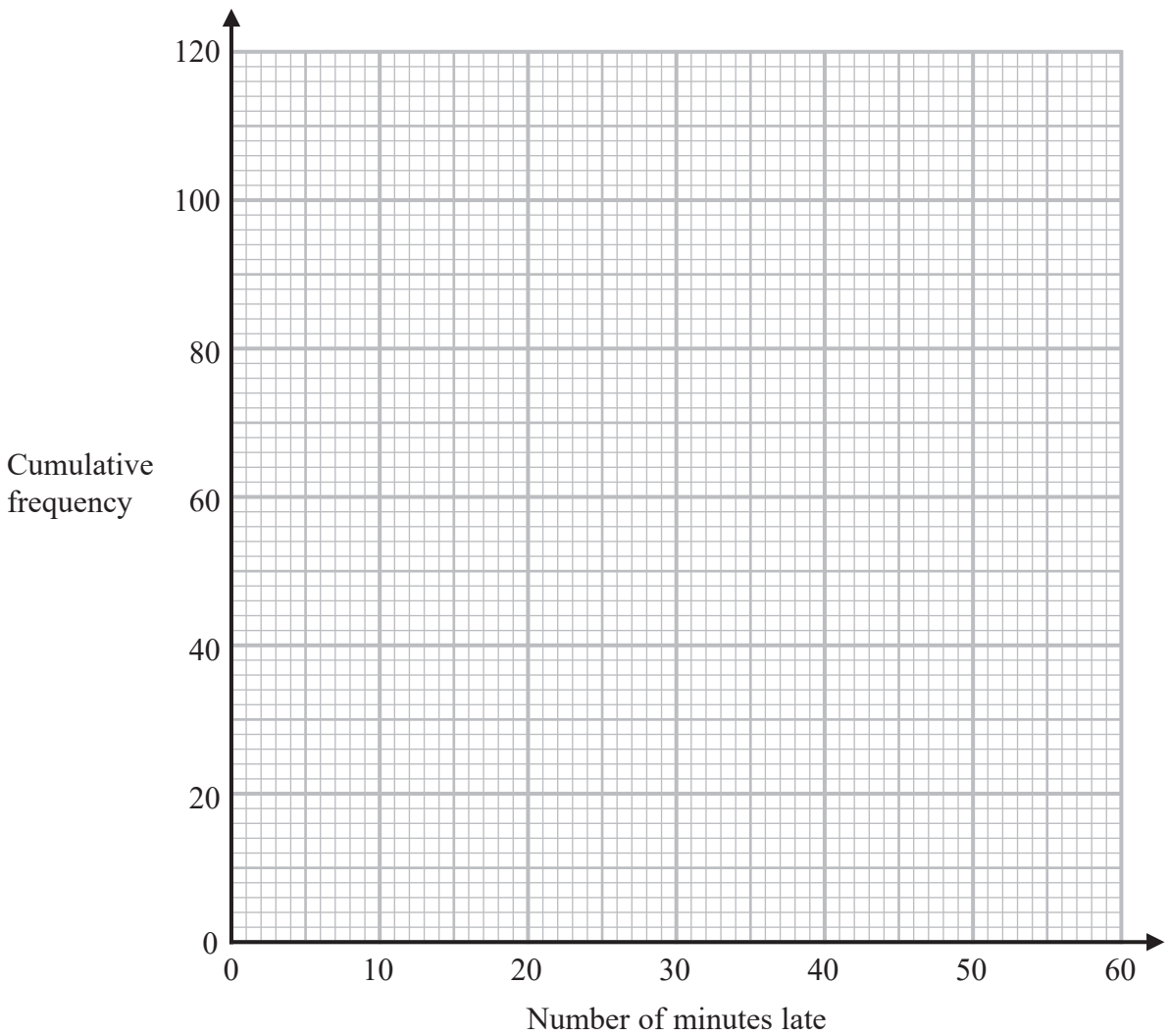


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(b) On the grid, draw a cumulative frequency graph for your table.



(2)

(c) Use your graph to find an estimate for the interquartile range.

.....minutes  
(2)

(d) Use your graph to find an estimate for the number of buses that were more than 48 minutes late last Monday.

.....  
(2)

(Total for Question 10 is 7 marks)



11 (a) Simplify fully  $(8e^{15})^{\frac{2}{3}}$

.....  
(2)

(b) Express  $\left(\frac{y}{2}\right)^{-4}$  in the form  $ay^n$  where  $a$  and  $n$  are integers.

.....  
(2)

(c) Solve  $\frac{4x-2}{3} - \frac{5-3x}{4} = 6$

Show clear algebraic working.

$x =$  .....  
(4)

(Total for Question 11 is 8 marks)



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12 Given that  $\frac{3^x}{9^{3x}} = 81$

find the value of  $x$ .  
Show clear algebraic working.

$x = \dots\dots\dots$

(Total for Question 12 is 3 marks)

13 Use algebra to show that  $0.6\bar{8}1 = \frac{15}{22}$

(Total for Question 13 is 2 marks)



14  $\mathcal{E} = \{\text{integers } x \text{ such that } 10 \leq x \leq 25\}$

$A = \{x : x < 18\}$

$B = \{x : 13 \leq x < 22\}$

(a) Write down  $n(A)$

.....  
(1)

(b) List the members of the set  $(A \cup B)'$

.....  
(2)

(c) List the members of the set  $A' \cap B$

.....  
(2)

$C \subset A, C \subset B$  and  $n(C) = 5$

(d) List the members of the set  $C$

.....  
(1)

**(Total for Question 14 is 6 marks)**

