

1. Arrange the numbers in ascending order (from smallest to biggest).

$\frac{16}{27}$ , 0.67, 60%,  $(0.8)^2$ ,  $\sqrt{\frac{4}{9}}$ ,  $\sin 43^\circ$

Answer ..... [2]

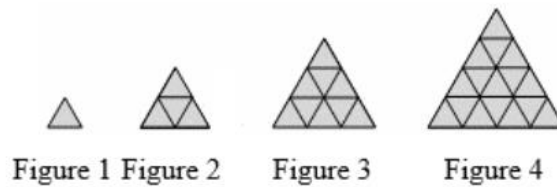
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2. Express  $\frac{15y^{-3}}{5x^{-4}}$  in positive indices.

Answer ..... [2]

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3



The diagram above shows a number pattern for the blocks Mark was trying to stack.

(a) Draw the pattern for Figure 5. [1]

(b) Complete this table.

[1]

Figure Number	1	2	3	4	5
Number of triangles	1	4	9		

(c) Write down an expression, in terms of  $n$ , for the number of triangular blocks in Figure  $n$ .

*Answer* ..... [1]

(d) Mark is given 64 triangular blocks to make a display piece. Is it possible to have a complete figure?  
Explain clearly.

*Answer:* .....

.....

[2]

4. A drawer contains 4 pairs of red socks, 3 pairs of blue socks and 5 pairs of yellow socks. A pair of socks is taken at random from the drawer.

(a) Find the probability that the pair of socks is blue.

*Answer* ..... [1]

(b) Find the probability that the pair of socks is not yellow.

*Answer* ..... [1]

(c) Find the probability that the pair of socks is white.

*Answer* ..... [1]

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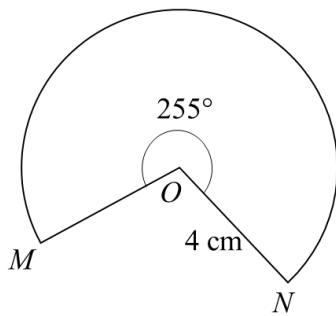
5. Solve  $6x - 12 = 3(x - 5)$ .

*Answer*  $x =$  ..... [2]

6. Solve  $3x^2 - 7x - 1 = 0$

Answer  $x = \dots\dots\dots$  or  $x = \dots\dots\dots$  [2]

7. The diagram shows a sector of a circle with radius 4 cm and sector angle  $255^\circ$ .



(a) Calculate the area of the sector.

Answer .....cm<sup>2</sup> [2]

(b) Calculate the perimeter of the sector.

Answer .....cm [2]

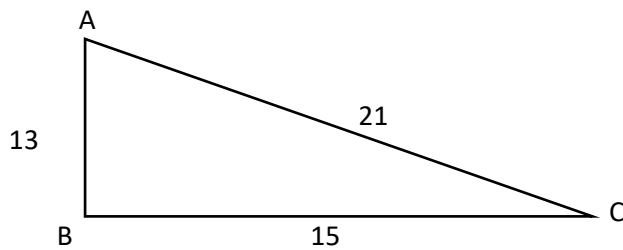
8. Ali and Ben travel from town  $A$  to town  $B$ . They both leave town  $A$  at the same time. Ali travels at an average speed of 45 km / h and Ben travels at an average speed of 12 m/s.

Who will arrive at Town  $A$  first?

Show your working.

Answer ..... [3]

9.



Use the Pythagoras Theorem to determine if  $\angle ABC = 90^\circ$ .

You must show all your working.

Answer ..... [3]

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10. The table below shows the distribution of ages of 14 students participating in a singing competition.

Age (in years)	12	13	14	15	16	17
Number of students	1	2	4	3	2	2

(a) State the median age

*Answer* ..... years old [1]

(b) State the modal age.

*Answer* ..... years old [1]

(c) Calculate the mean age of the participants.

*Answer* ..... years old [2]

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11. On a map, 5 cm represents an actual distance of 2.5 km.

(a) Express the map scale in the form of  $1 : n$ .

*Answer* : ..... [1]

(b) Find the distance on the map between two towns that are actually 6 km apart.

*Answer* ..... cm [1]

(c) On the map a soccer field has an area of 25 cm<sup>2</sup>.  
Calculate the actual area in square kilometres.

*Answer* .....km<sup>2</sup> [2]

12. Archie invest \$2000 in a bank which earns simple interest.

He earns an interest of \$150 after 3 years.

Calculate the percentage rate of interest per year.

*Answer* ..... [2]

(b) Sam invests \$2000 in a bank for 3 years. He earns compound interest at 1.65% per year.

Who received the greater interest at the end of 3 years and by how much?

Give your answer to the nearest cent.

*Answer(b)* ..... by \$ ..... [4]

(c) The cash price of a washing machine is \$ 980.

Jen buys the washing machine through hire purchase.

She paid a deposit of 15% of the cash price plus 12 equal monthly payment.

Calculate the deposit Jen pays.

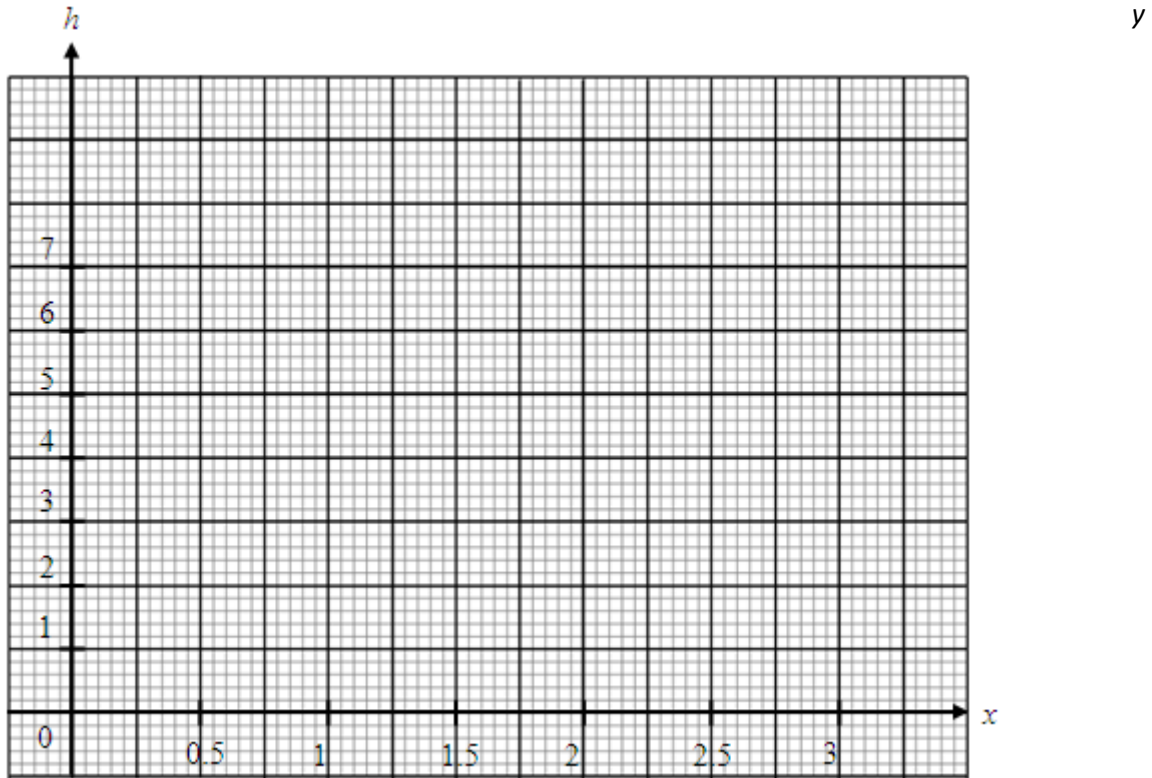
*Answer* \$..... [2]



13. (a) Complete the table of for  $y = -2x^2 + 7x$ . [1]

$x$	0	0.5	1	1.5	2	2.5	3
$y$	0	3			6	5	

(b) On the grid, draw the graph of  $y = -2x^2 + 7x$ . [3]



(c) Using your graph, find

(i) Equation of the line of symmetry,

Answer ..... [1]

(ii) Maximum value of  $y$

Answer ..... [1]

(d) From the graph, estimate the values of  $x$  when  $y = 4$ .

Answer  $x = \dots\dots\dots$  or  $\dots\dots\dots$  [2]