

Name: \_\_\_\_\_



**The End of**

**Year 11**

**Additional Tasks**



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## Quiz 1



1) Simplify the fraction  $\frac{72}{84}$ .

2) Evaluate  $4^{-2}$ .

3) Calculate 30% of £50.

4)  $\sqrt{16} \times \sqrt{36}$

5) Solve  $\frac{x}{2} = 6$

6) Expand  $(x + 6)(x - 3)$

7) How many edges does a nonagon have?

8) What is the sampling interval when choosing a systematic sample 7 out of 40 people?

9) The range of 7, 3, 8, 9, 4

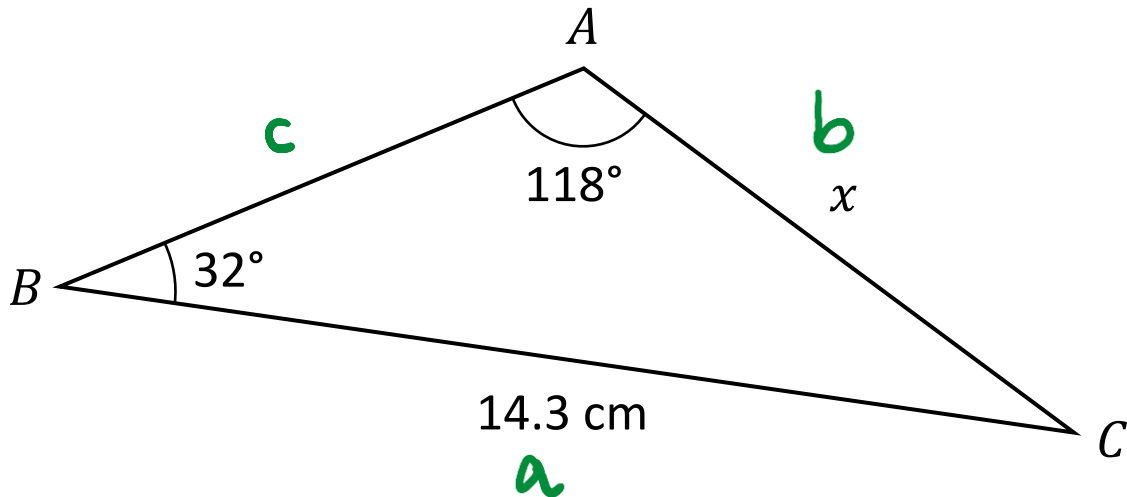
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## Example 1



Calculate the missing length  $x$ .



The Sine Rule:

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$\frac{14.3}{\sin 118^\circ} = \frac{x}{\sin 32^\circ}$$

$$\left( \frac{14.3}{\sin 118^\circ} \right) \times \sin 32^\circ = x$$

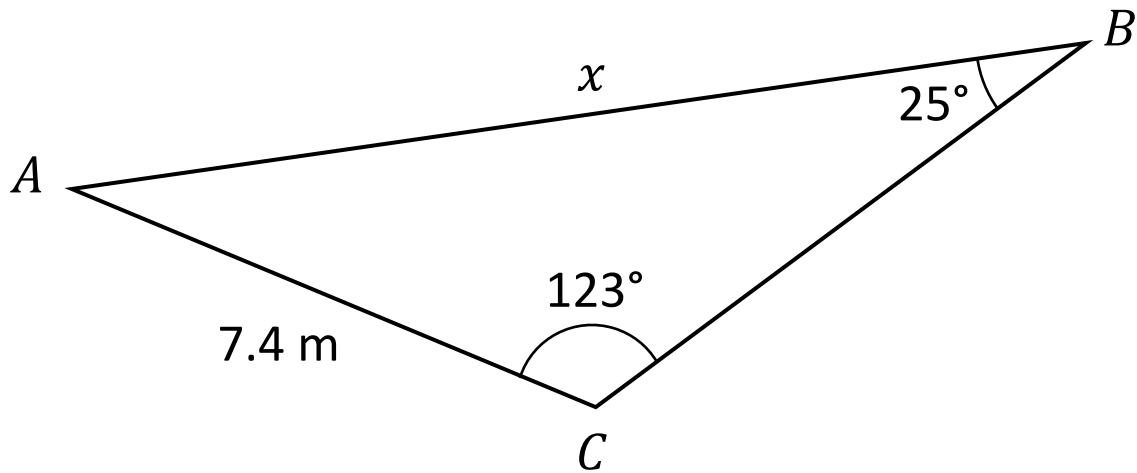
$$x = 8.58 \text{ cm to 2 d.p.}$$



## Exercise 1



Calculate the missing length  $x$ .



\_\_\_ out of 3



## Quiz 2



What is the formula?

1) Area of a Circle

=

2) Density =

3) Length of an Arc

=

4) Population  
Density =

5) Volume of a  
Cuboid =

6) Area of a  
Trapezium =

7) Area of a  
Parallelogram =

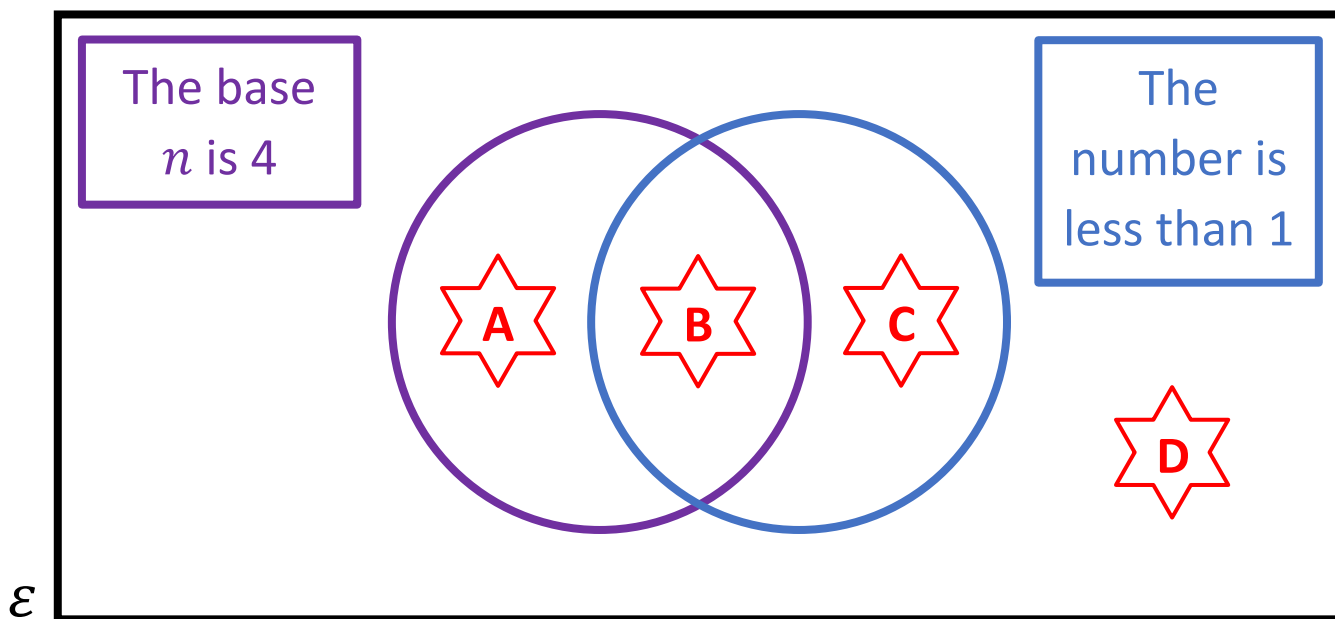
8) Area of a  
Triangle =

9) Volume of a  
Sphere =

\_\_\_ out of 9



Venn Diagram Challenge 1



Think of a number of the form  $n^a$  that could fit into each region. If you think a region is impossible to fill, explain why!







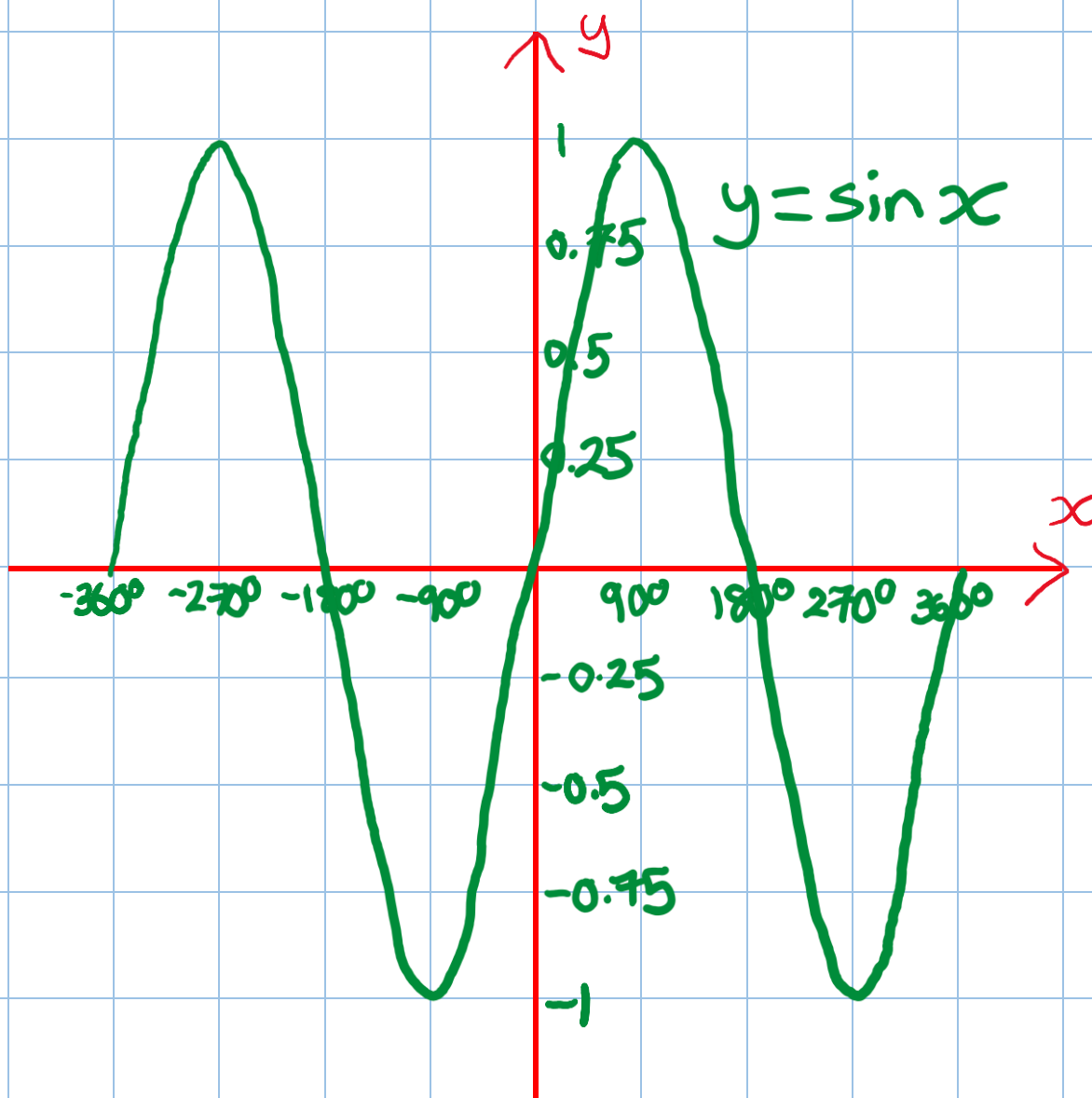




## Example 2

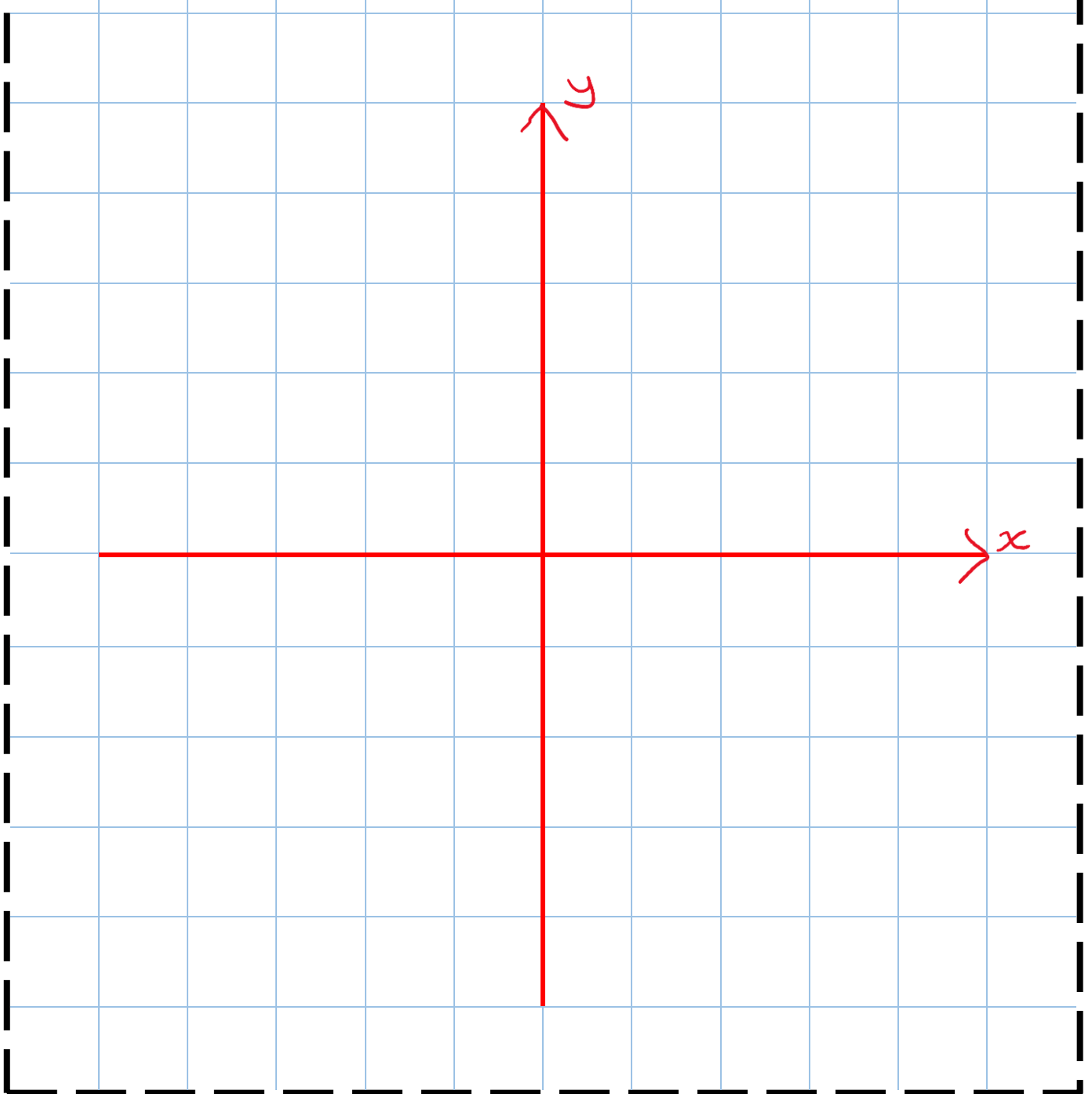


Sketch the graph  $y = \sin x$  for values of  $x$  between  $-360^\circ$  and  $360^\circ$ .



## Exercise 2

Sketch the graph  $y = \cos x$  for values of  $x$  between  $-360^\circ$  and  $360^\circ$ .



\_\_\_ out of 4

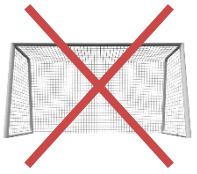


## Quiz 3

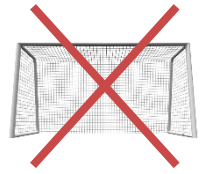


$8 \times 7$	$2 \div 0.5$	$4 - -3$	$18 \div -2$	$2.1 + 0.5$
$9 \times 8$	$3 \div 0.25$	$2 + -7$	$-9 \div 3$	$0.3 - 0.5$
$6 \times 12$	$1 \div 0.2$	$-3 + -4$	$-15 \div -3$	$2.3 \times 3$
$9 \times 7$	$5 \div 0.1$	$-5 - 6$	$-4 \times 3$	$5 \div 10$
$11 \times 12$	$3 \div 0.3$	$-2 - +3$	$-8 \times -6$	$4 - 2.6$

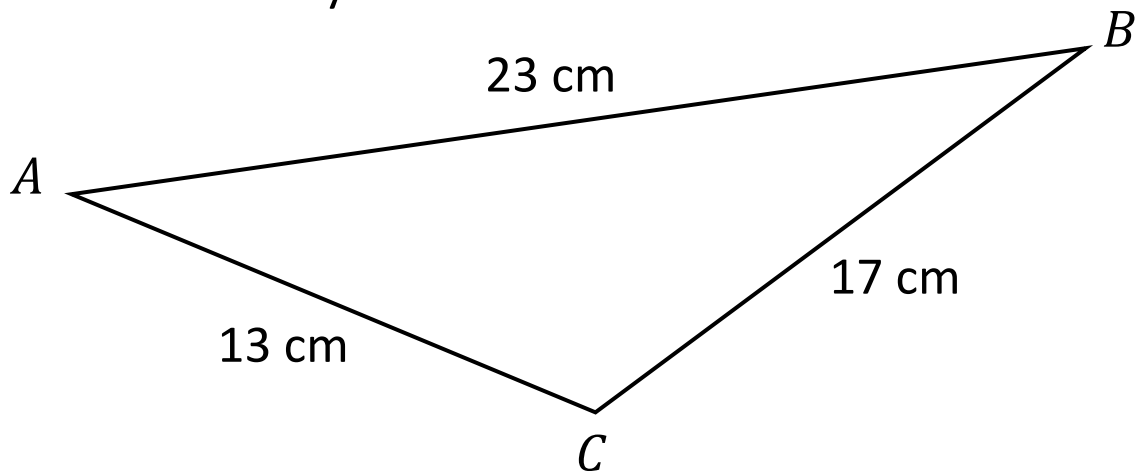
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## The Triangle



For the triangle shown below, what additional information can you calculate?

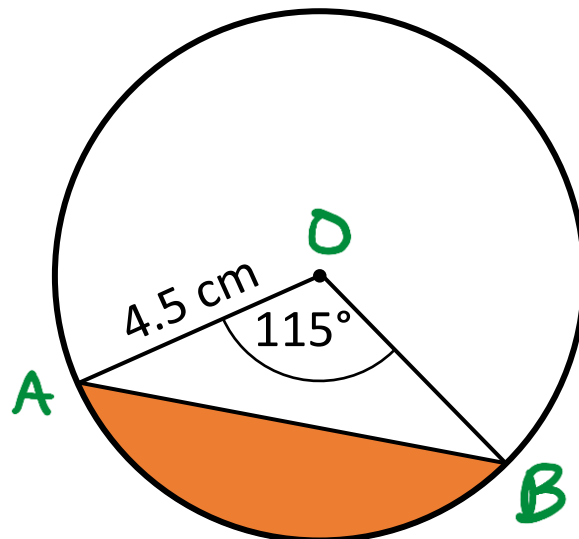




### Example 3



What is the area of the orange segment?



Area of

sector AOB

$$= \frac{\theta}{360} \times \pi r^2$$

$$= \frac{115}{360} \times \pi \times 4.5^2$$

$$= 20.32217748 \text{ cm}^2$$

Area of

triangle AOB

$$= \frac{1}{2} ab \sin C$$

$$= \frac{1}{2} \times 4.5 \times 4.5 \times \sin 115^\circ$$

$$= 9.176366344 \text{ cm}^2$$

Area of the orange segment

$$= 20.32217748 - 9.176366344$$

$$= 11.15 \text{ cm}^2 \text{ to 2 d.p.}$$





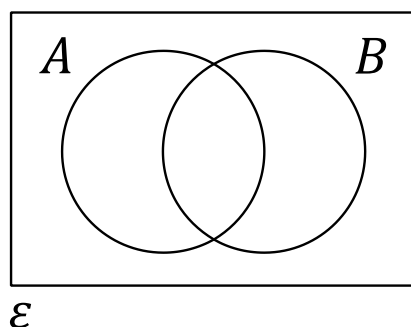
## Quiz 4



1) What is 20% of £30?

2) In which quadrant is the co-ordinate  $(-5, 2)$ ?

3) Shade  $A'$ .



4) Sketch a kite.

5) Share £48 between Ann and Bryn according to the ratio 3 : 5.

6) What is the  $n$ th term of the sequence 16, 13, 10, 7, 4, ...?

7) Evaluate  $36^{\frac{1}{2}}$ .

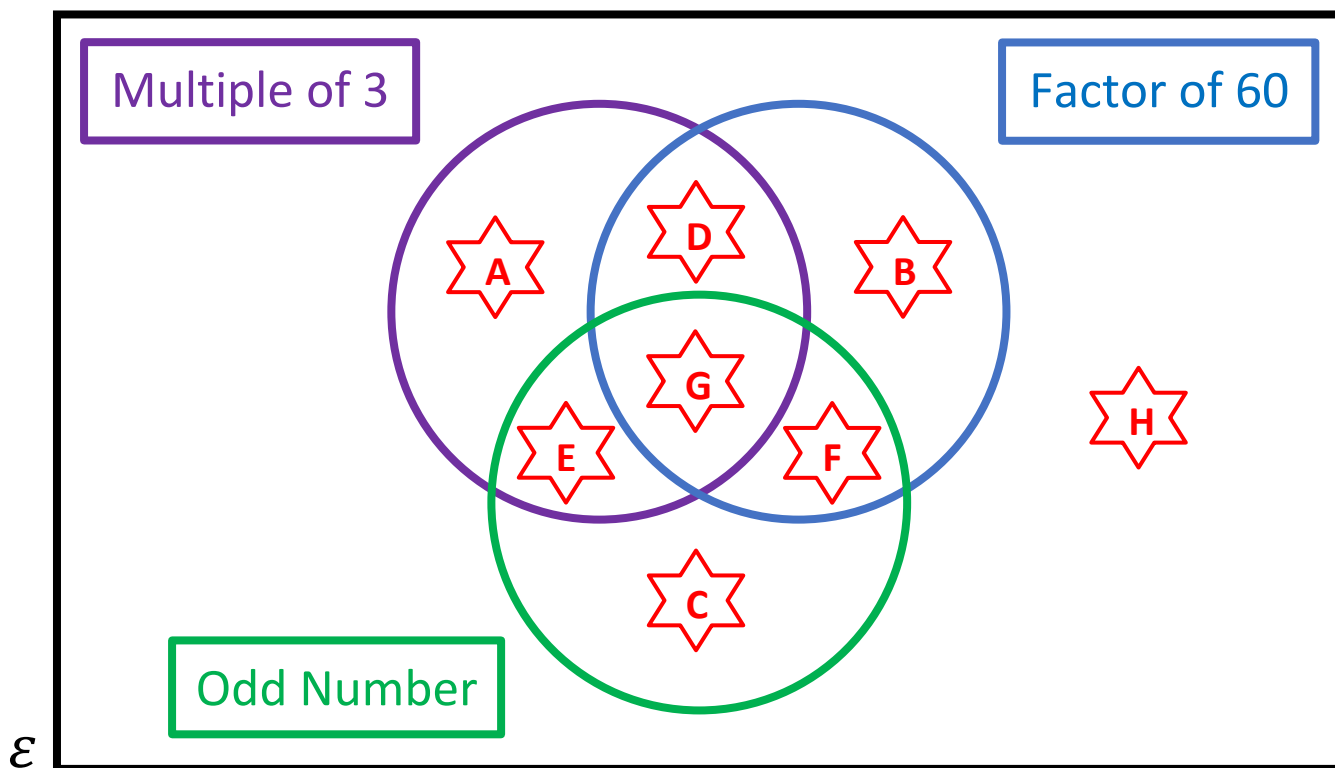
8) Make  $x$  the subject of the formula  $y = 3x - 6$ .

9) What is the lower bound of the measurement 25 cm, measured to the nearest cm?

\_\_\_ out of 9



# Venn Diagram Challenge 2



Think of a number that could fit into each region. If you think a region is impossible to fill, explain why!

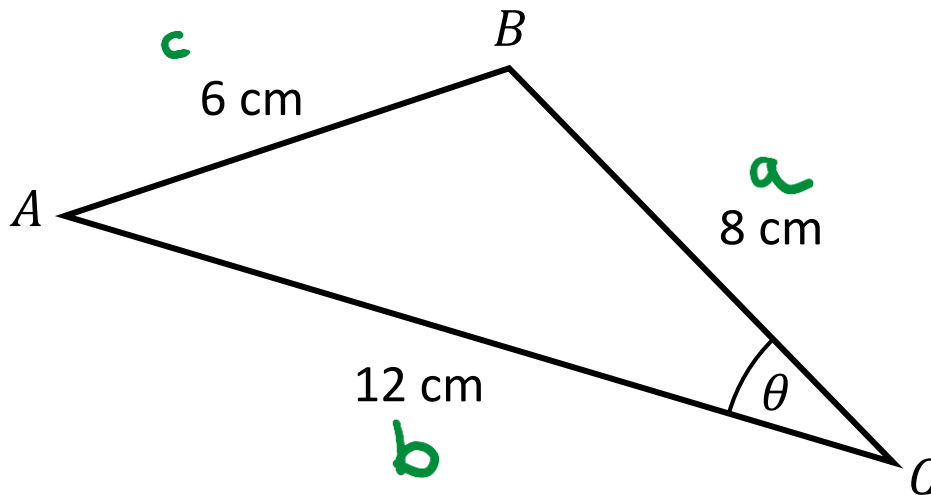
A		E	
B		F	
C		G	
D		H	



### Example 4



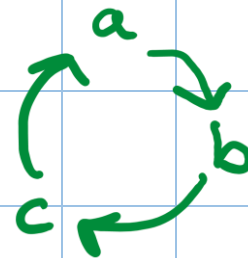
Calculate the size of the angle  $\theta$ .



Cosine Rule for finding angles:

$$\cos A = \frac{b^2 + c^2 - a^2}{2bc}$$

$$\cos C = \frac{a^2 + b^2 - c^2}{2ab}$$



$$\cos \theta = \frac{8^2 + 12^2 - 6^2}{2 \times 8 \times 12}$$

$$\theta = \frac{26.38^\circ}{\text{to 2 d.p.}}$$

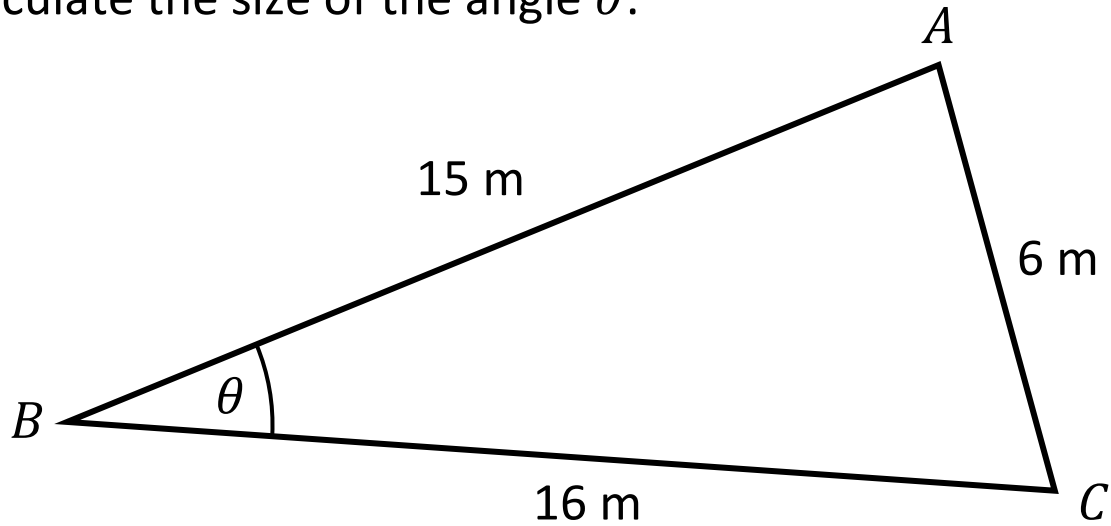
$$\theta = \cos^{-1} \left( \frac{8^2 + 12^2 - 6^2}{2 \times 8 \times 12} \right)$$



## Exercise 4



Calculate the size of the angle  $\theta$ .



\_\_\_ out of 3



## Quiz 5



1) Solve the inequality

$$2x + 3 < 8$$

2) Write two different formulae for calculating the area of a triangle.

3) Simplify  $x^4 \times x^2$ .

4) What are the next two numbers?

1, 4, 9, 16, ....., .....

5) Factorise  $x^2 + 9x + 20$ .

6) In a box and whisker diagram, the line in the middle of the box represents the...

7) Expand  $(x - 4)(x + 8)$ .

8) What is the circumference of a circle with radius 7.5 cm?

9) What is the reciprocal of  $\frac{4}{5}$ ?  
Write your answer as a mixed number.

\_\_\_ out of 9



## Square Root of 40



1) Which number do you obtain on squaring  $\sqrt{40}$ ?

2) Between which two whole numbers does  $\sqrt{40}$  appear?

$$\sqrt{40}$$

3) Write  $\sqrt{40}$  in the form  $a\sqrt{b}$ , where  $a$  and  $b$  are whole numbers.

4)  $\sqrt{40}$  is the hypotenuse of a right-angled triangle. Find the two other lengths of the triangle, given they are whole number lengths.

\_\_\_ out of 6

# Evaluating the Workbook



# Notes



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