



# Bishops Online Tutoring



Education Consultancy

## Edexcel GCSE Mathematics

### SIMILAR SHAPES

#### Materials Required:

- Pen
- HB Pencil
- Ruler (in centimetres and millimetres)
- Protractor
- Compass

#### Instructions:

- Use a black ink pen to answer all questions
- Fill your name in the section below
- Answer the questions in the spaces provided
- Show your working out for all answers

#### Information:

- The marks allocated for each question are displayed within brackets – utilise this information to gauge the appropriate amount of time to dedicate to each question
- Questions marked with an asterisk (\*) will assess your written communication; be careful of spelling, punctuation and grammar with these questions

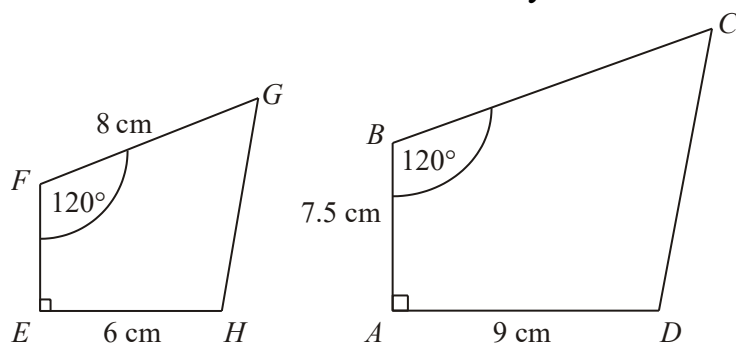
#### Advice:

- Carefully read the question before attempting to answer it
- Be vary of time and try to answer every question
- If you have enough time in the end, go back and check your answers. A good way to check your answers is to retry the question with the hope of getting the same answer as before without looking at your working out from before

## CALCULATOR ALLOWED

<b>NAME:</b>	
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1. Shapes  $ABCD$  and  $EFGH$  are mathematically similar.



Diagrams **NOT** accurately drawn

(a) Calculate the length of  $BC$ .

..... cm

(2)

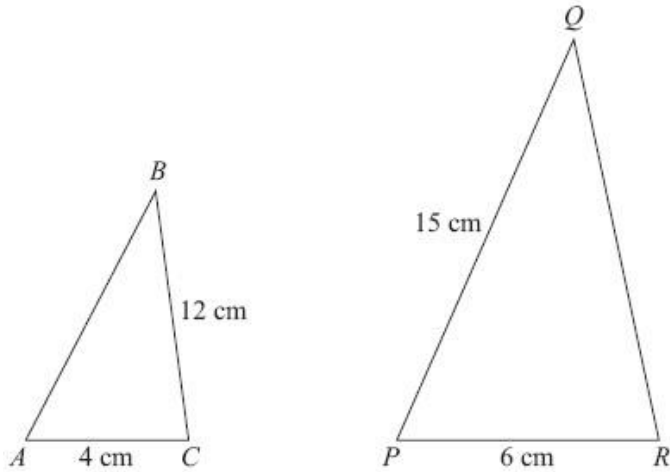
(b) Calculate the length of  $EF$ .

..... cm

(2)

**(Total 4marks)**

2.



Diagrams **NOT**  
accurately drawn

Triangles  $ABC$  and  $PQR$  are mathematically similar.

Angle  $A =$  angle  $P$ .

Angle  $B =$  angle  $Q$ .

Angle  $C =$  angle  $R$ .

$AC = 4$  cm.

$BC = 12$  cm.

$PR = 6$  cm.

$PQ = 15$  cm.

(a) Work out the length of  $QR$ .

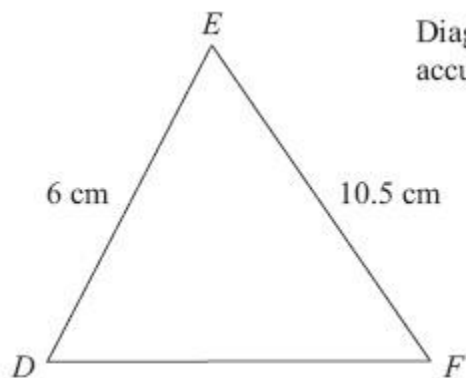
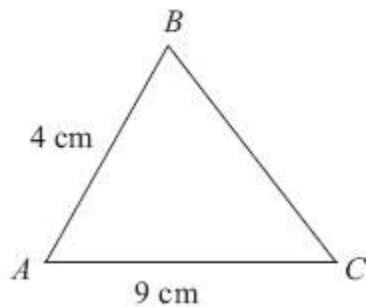
.....cm  
(2)

(b) Work out the length of  $AB$ .

.....cm  
(2)

**(Total 4marks)**

3.



Diagrams **NOT**  
accurately drawn

Triangles  $ABC$  and  $DEF$  are similar.

$$AB = 4\text{ cm.}$$

$$AC = 9\text{ cm.}$$

$$DE = 6\text{ cm.}$$

$$EF = 10.5\text{ cm.}$$

(a) Work out the length of  $DF$ .

..... cm  
(2)

(b) Work out the length of  $BC$ .

..... cm  
(2)

**(Total 4marks)**

4. The diagram shows two similar triangles.

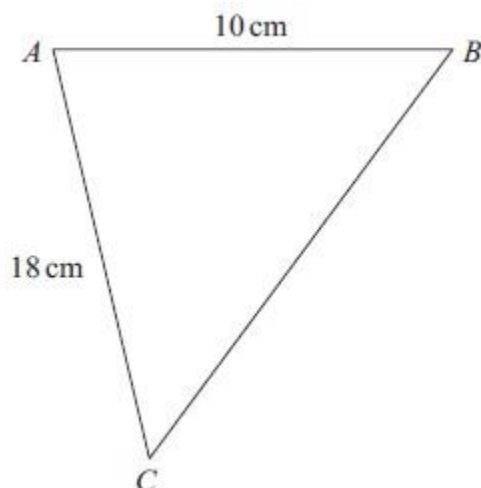
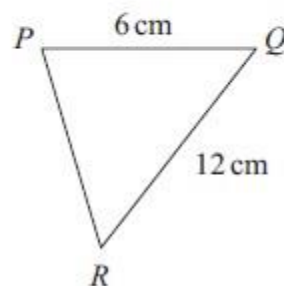


Diagram NOT  
accurately drawn



In triangle  $ABC$ ,  $AB = 10$  cm and  $AC = 18$  cm.

In triangle  $PQR$ ,  $PQ = 6$  cm and  $QR = 12$  cm.

Angle  $ABC =$  angle  $PQR$ .

Angle  $CAB =$  angle  $RPQ$ .

- (a) Calculate the length of  $BC$ .

..... cm  
(2)

- (b) Calculate the length of  $PR$ .

..... cm  
(2)

**(Total 4marks)**

5.

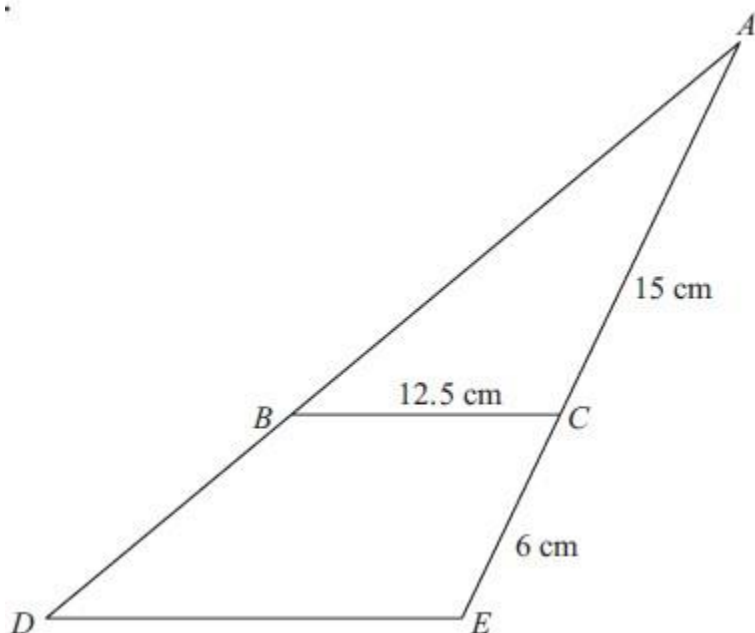


Diagram NOT  
accurately drawn

Triangle  $ABC$  is similar to triangle  $ADE$ .

$AC = 15$  cm.

$CE = 6$  cm.

$BC = 12.5$  cm.

Work out the length of  $DE$ .

..... cm

**(Total 3marks)**

\*6.



Pictures  
**NOT** accurately  
drawn

A 20 Euro note is a rectangle 133 mm long and 72 mm wide.

A 500 Euro Note is a rectangle 165 mm long and 82 mm wide.

Show that the two rectangles are not mathematically similar.

**(Total 3marks)**

7. The diagram shows two similar solids, A and B.

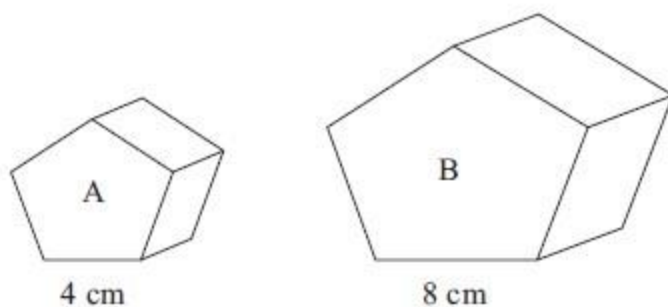


Diagram **NOT**  
accurately drawn

Solid A has a volume of  $80 \text{ cm}^3$ .

- (a) Work out the volume of solid B.

..... $\text{cm}^3$   
(2)

Solid B has a total surface area of  $160 \text{ cm}^2$ .

- (b) Work out the total surface area of solid A.

..... $\text{cm}^2$   
(2)

**(Total 4 marks)**