

# Edexcel GCSE

## Mathematics (Linear) – 1MA0

# SIMILAR SHAPES

### Materials required for examination

Ruler graduated in centimetres and millimetres, protractor, compasses, pen, HB pencil, eraser.  
Tracing paper may be used.

### Items included with question papers

Nil



### Instructions

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Use black ink or ball-point pen.

Fill in the boxes at the top of this page with your name, centre number and candidate number.

Answer all questions.

Answer the questions in the spaces provided – there may be more space than you need.

Calculators may be used.

### Information

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The marks for each question are shown in brackets – use this as a guide as to how much time to spend on **each** question.

Questions labelled with an **asterisk** (\*) are ones where the quality of your written communication will be assessed – you should take particular care on these questions with your spelling, punctuation and grammar, as well as the clarity of expression.

### Advice

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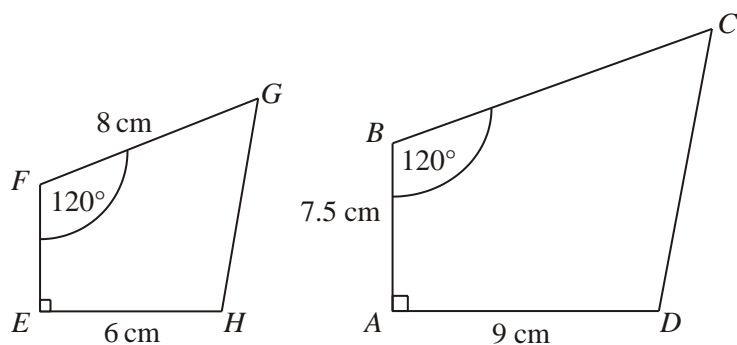
Read each question carefully before you start to answer it.

Keep an eye on the time.

Try to answer every question.

Check your answers if you have time at the end.

1. Shapes  $ABCD$  and  $EFGH$  are mathematically similar.



Diagrams **NOT** accurately drawn

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

..... cm

(2)

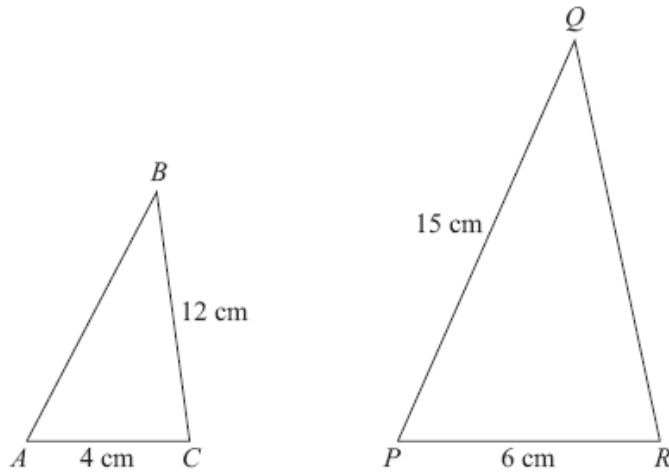
- (b) Calculate the length of  $EF$ .

..... cm

(2)

**(Total 4 marks)**

2.



Diagrams **NOT**  
accurately drawn

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

Angle  $A = \text{angle } P$ .

Angle  $B = \text{angle } Q$ .

Angle  $C = \text{angle } R$ .

$AC = 4\text{ cm}$ .

$BC = 12\text{ cm}$ .

$PR = 6\text{ cm}$ .

$PQ = 15\text{ cm}$ .

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

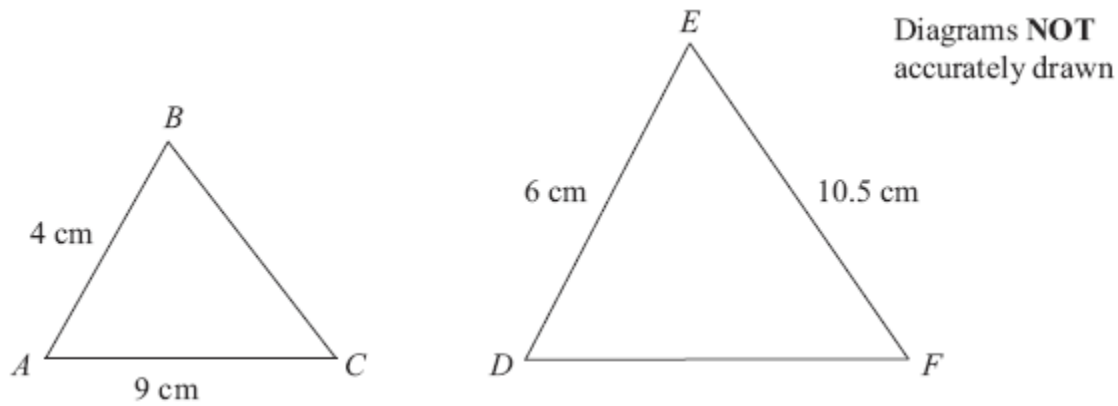
.....cm  
(2)

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

.....cm  
(2)

**(Total 4 marks)**

3.



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  $DF$ . (2)

..... cm

(b) Work out the length of  $BC$ . (2)

..... cm

**(Total 4 marks)**

4. The diagram shows two similar triangles.

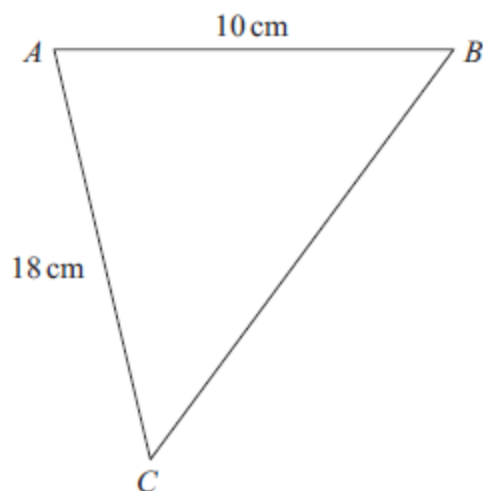
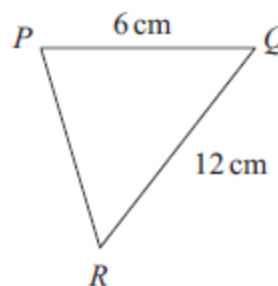


Diagram NOT  
accurately drawn



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

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

Angle  $ABC = \text{angle } PQR$ .

Angle  $CAB = \text{angle } RPQ$ .

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

..... cm  
(2)

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

..... cm  
(2)

(Total 4 marks)

5.

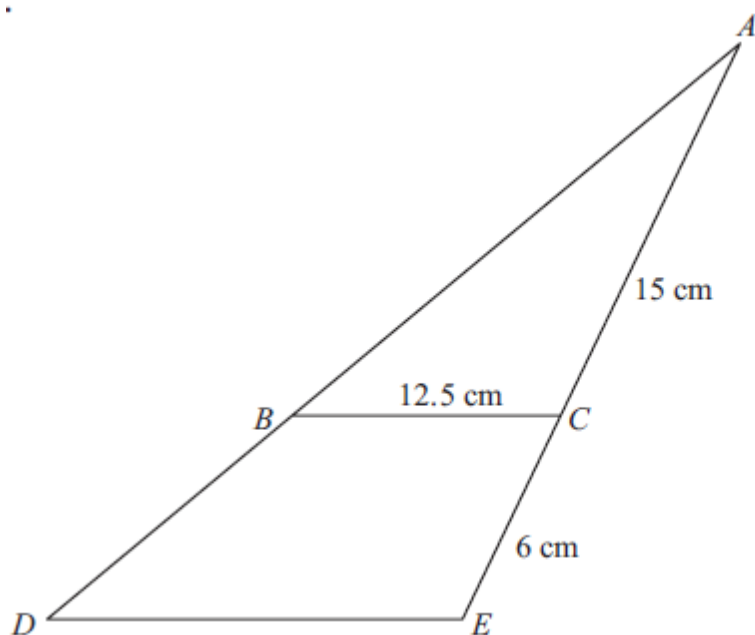


Diagram NOT  
accurately drawn

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 3 marks)**

**\*6.**



Pictures **NOT**  
accurately drawn

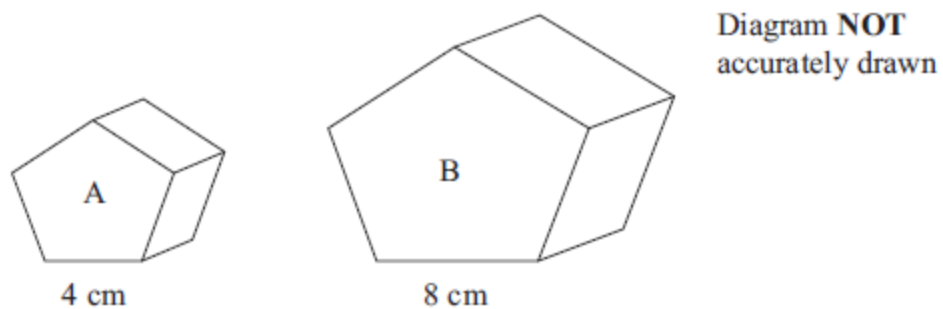
A 20 Euro note is a rectangle 133 mm long and 72 mm wide.

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

Show that the two rectangles are not mathematically similar.

**(Total 3 marks)**

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



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)