

Past Paper Questions – Similar Triangles and other similar shapes

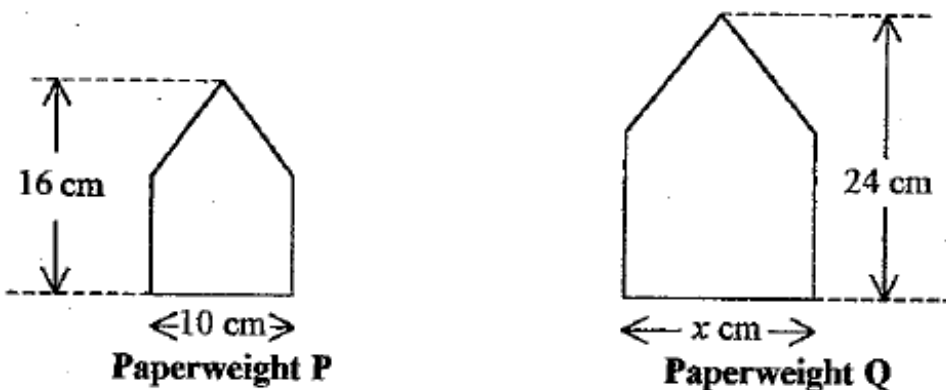
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A sheet of drawing paper is mathematically similar to a sheet of A5 paper.  
A sheet of A5 paper is a rectangle 210 mm long and 148 mm wide.  
The sheet of drawing paper is 450 mm long.

Calculate the width of the sheet of drawing paper.  
Give your answer correct to 3 significant figures.

4

Paperweights are sold in different sizes.



Diagrams **NOT**  
accurately drawn

The diagrams show the cross-sections of two mathematically similar paperweights **P** and **Q**.

The height of **P** is 16 cm.  
The height of **Q** is 24 cm.

The edge of the base of **P** is 10 cm long.  
The edge of the base of **Q** is  $x$  cm long.

Calculate the value of  $x$ .

11.



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 160 mm long and 82 mm wide.

Show that the two rectangles are **not** mathematically similar.

11.

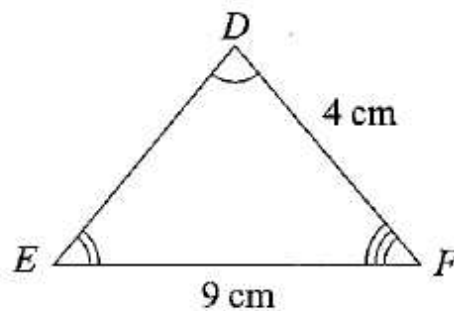
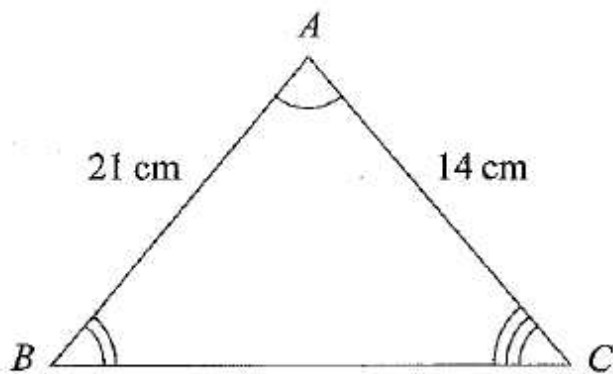


Diagram **NOT** accurately drawn

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

Angle  $BAC =$  angle  $EDF$ .

Angle  $ABC =$  angle  $DEF$ .

Angle  $ACB =$  angle  $DFE$ .

$AB = 21$  cm and  $AC = 14$  cm.

$DF = 4$  cm and  $EF = 9$  cm.

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

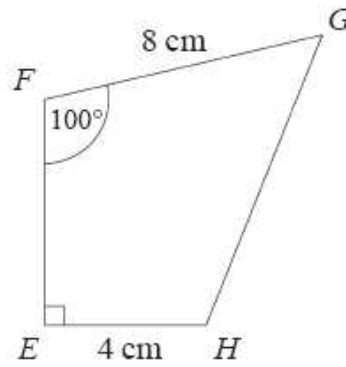
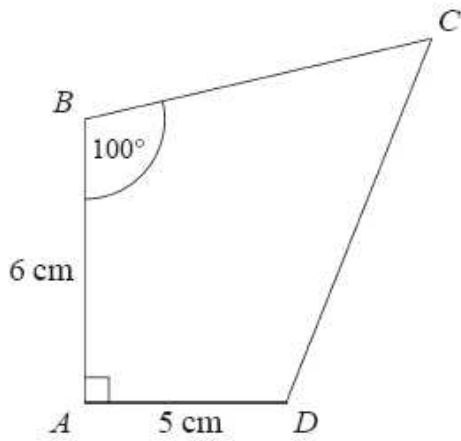
$DE = \dots\dots\dots$  cm  
(2)

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

$BC = \dots\dots\dots$  cm  
(2)

10.

Diagrams **NOT**  
accurately drawn



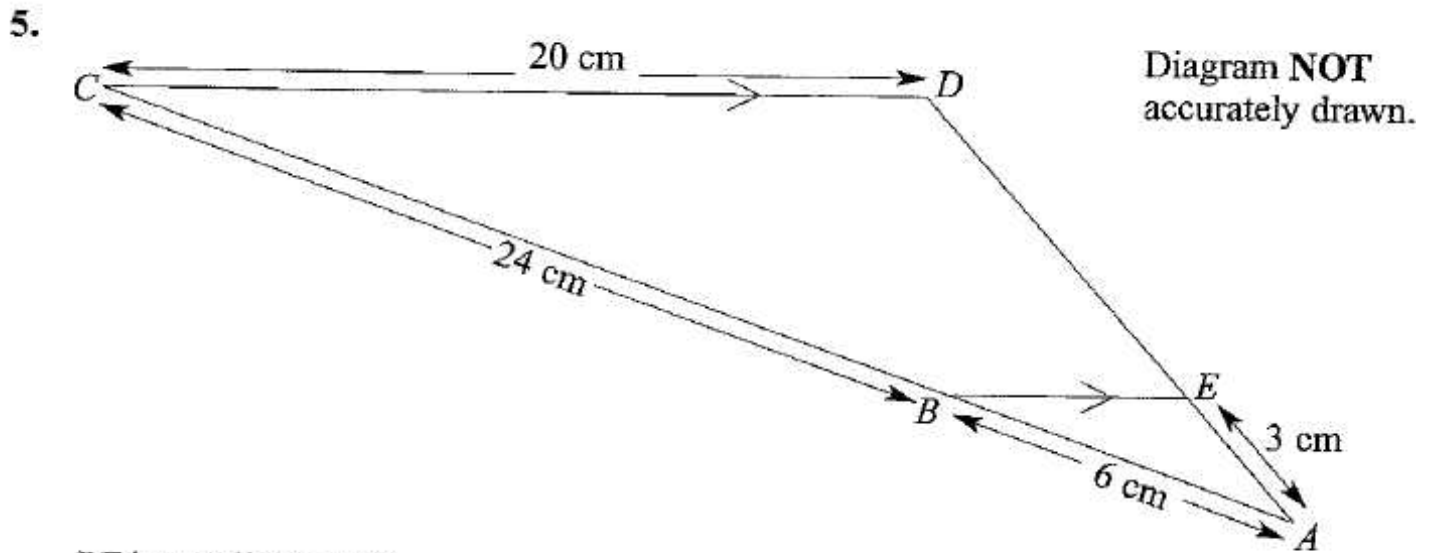
Shapes  $ABCD$  and  $EFGH$  are mathematically similar.

(i) Calculate the length of  $BC$ .

$BC = \dots\dots\dots$  cm

(ii) Calculate the length of  $EF$ .

$EF = \dots\dots\dots$  cm  
(5)



$BE$  is parallel to  $CD$ .

$ABC$  and  $AED$  are straight lines.

$AB = 6$  cm,  $BC = 24$  cm,  $CD = 20$  cm,  $AE = 3$  cm.

(a) Calculate the length of  $BE$ .

..... cm  
(2)

(b) Calculate the length of  $DE$ .

..... cm  
(2)

10.

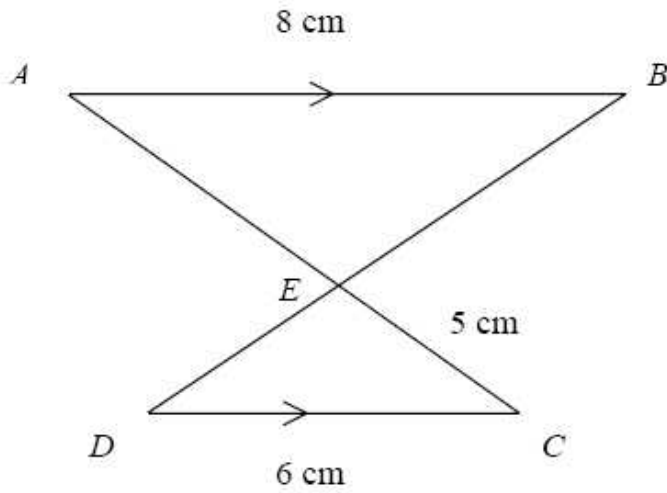


Diagram **NOT** accurately drawn

$AB$  is parallel to  $DC$ .

The lines  $AC$  and  $BD$  intersect at  $E$ .

$AB = 8\text{ cm}$      $EC = 5\text{ cm}$      $DC = 6\text{ cm}$

(a) Explain why triangle  $ABE$  and triangle  $CDE$  are similar.

.....

.....

.....

(2)

(b) Calculate the length of  $AC$ .

..... cm  
(3)