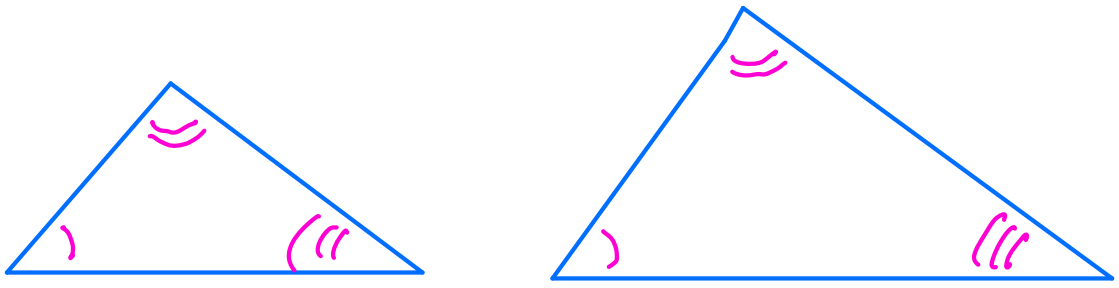
Similar Triangles

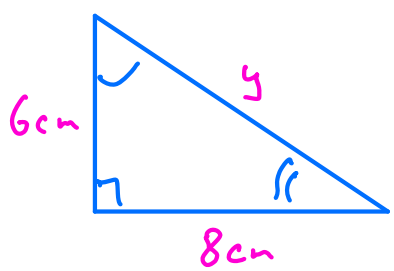


Triangles that have the same angles are similar

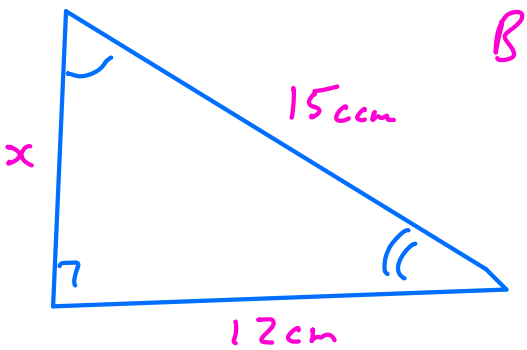
One is simple an enlargement of the other.

Scale Factors

A



B



Find x and y

Ratio 8 : 12

Scale factor A → B $= \frac{12}{8} = \frac{3}{2}$

Scale factor B → A $= \frac{8}{12} = \frac{2}{3}$

$x = 6 \times \frac{3}{2} = 9\text{cm}$

$y = 15 \times \frac{2}{3} = 10\text{cm}$

First find the ratio between a pair of corresponding sides, say $a : b$

This gives two scale factors $\frac{a}{b}$ and $\frac{b}{a}$

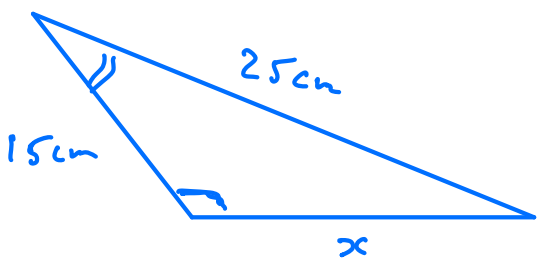
one less than 1 and greater than 1

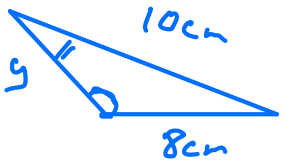
To find a side in the large triangle, multiply its corresponding side in the small triangle by the scale factor bigger than 1.

To find a side in the small triangle multiply its corresponding side in the large triangle by the scale factor less than 1.

Exercise Find p, q

1)





Ratio $25 : 10$

$5 : 2$

$y = 15 \times \frac{2}{5} = 6\text{cm}$

$x = 8 \times \frac{5}{2} = 20\text{cm}$

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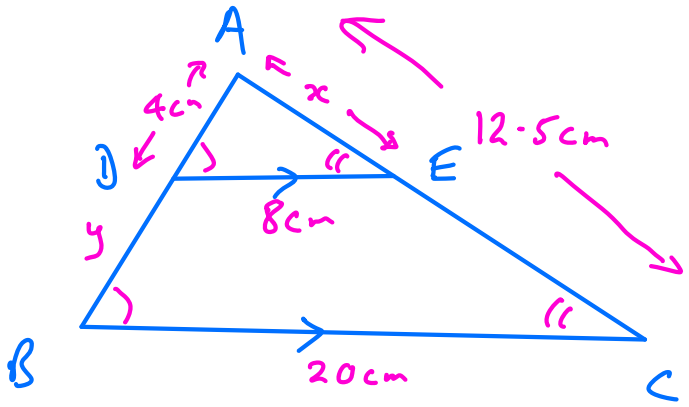
2)



$AC = 12.5\text{cm}$

$DE = 8\text{cm}$

$BC = 20\text{cm}$

$AD = 4\text{cm}$

$\triangle$s ABC are similar
ADE

Find x, y

Ratio $8 : 20$

$2 : 5$

$x = 12.5 \times \frac{2}{5} = 5\text{cm}$

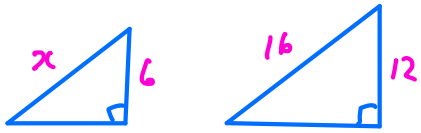
$y + 4 = 4 \times \frac{5}{2} = 10\text{cm}$

$y = 10 - 4$

$y = 6\text{cm}$

Exercise 14A Q6 Blue Book

a)

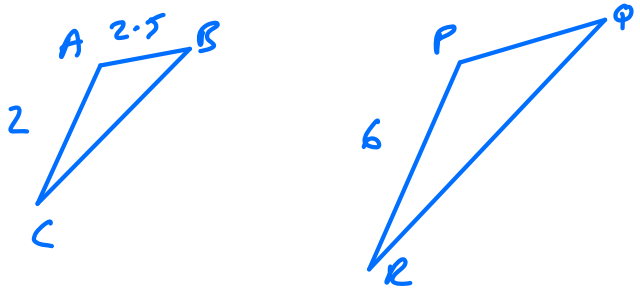


Ratio $6 : 12$

$= 1 : 2$

$x = 16 \times \frac{1}{2} = 8\text{cm}$

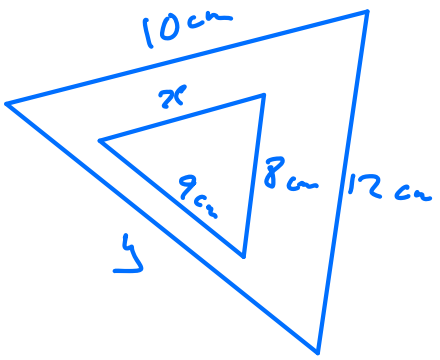
b)



$PQ = 2.5 \times 3 = 7.5\text{cm}$

Ratio $2:6$
$= 1:3$

c)

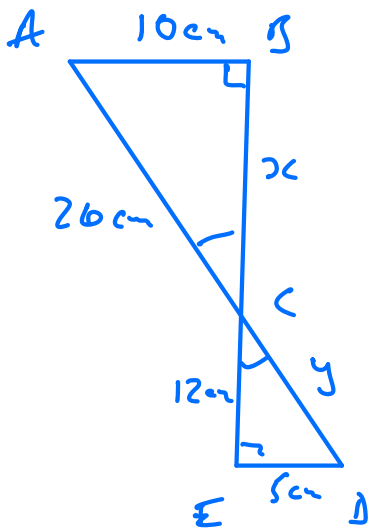


$x = 10 \times \frac{2}{3} = \frac{20}{3} = 6\frac{2}{3}\text{cm}$

$y = 9 \times \frac{3}{2} = \frac{27}{2} = 13\frac{1}{2}\text{cm}$

Ratio $8:12$
$= 2:3$

d)



$x = 12 \times 2 = 24\text{cm}$

$y = 26 \times \frac{1}{2} = 13\text{cm}$

Ratio $10:5$
$= 2:1$