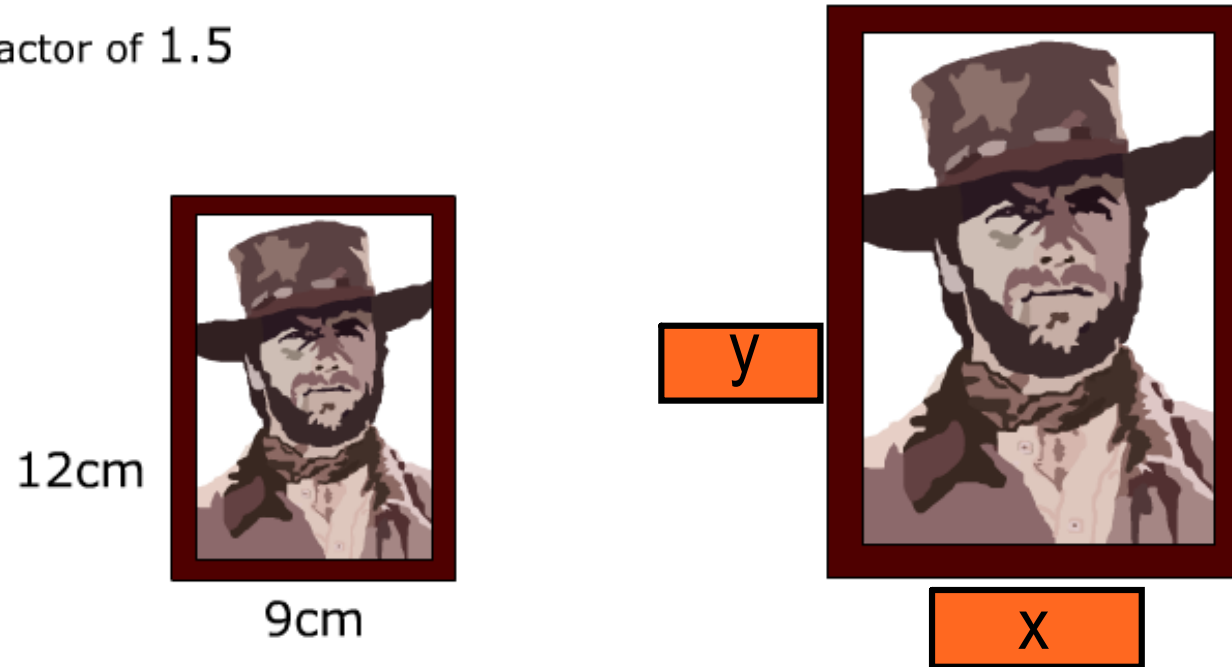
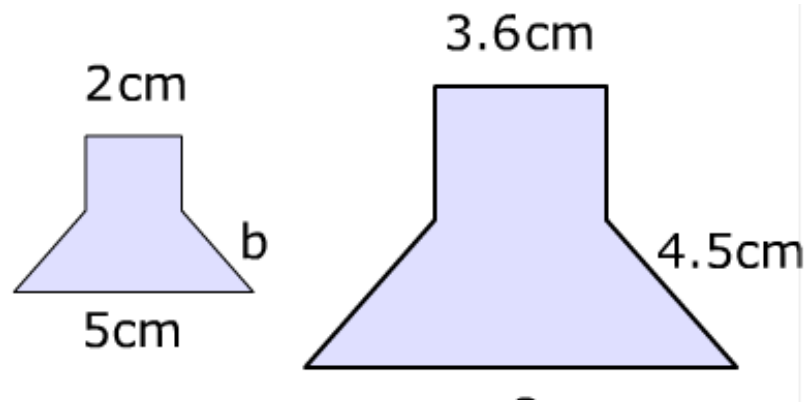


Similar shapes

This photo has been enlarged
by a scale factor of 1.5



What is x and y ?



Look for a pair of
corresponding sides.

Here, 2cm has been enlarged to 3.6cm.

The scale factor is

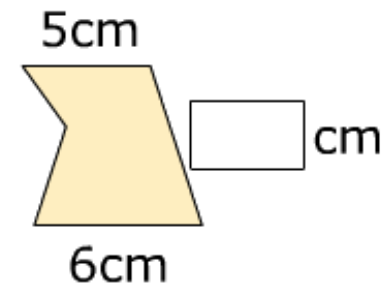
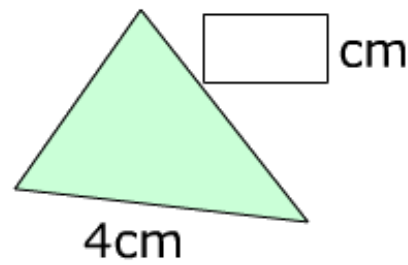
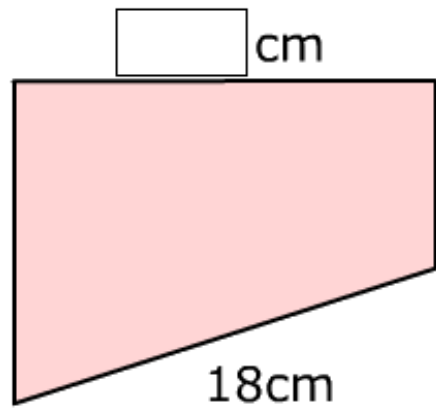
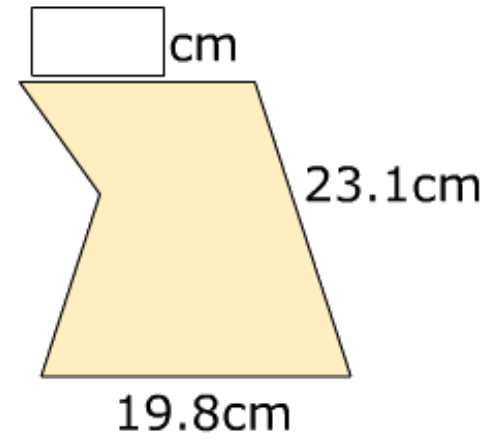
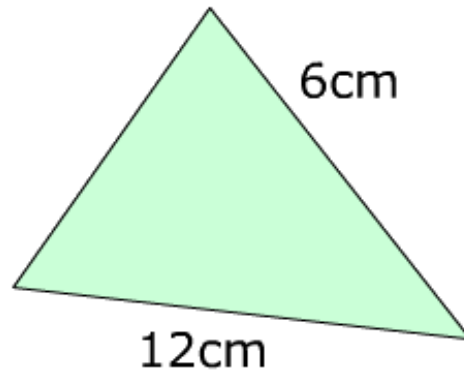
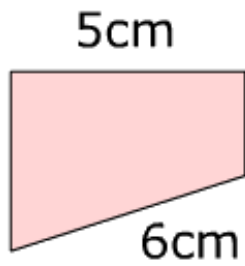
$$\frac{\text{Big}}{\text{Small}} = \frac{3.6}{2} = 1.8$$

Work out

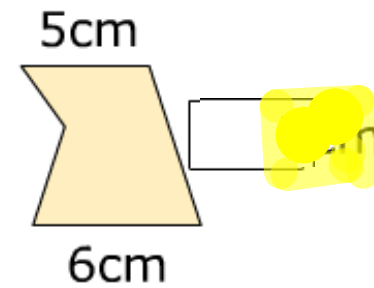
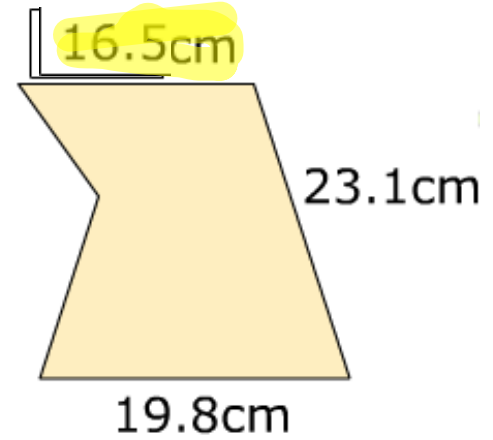
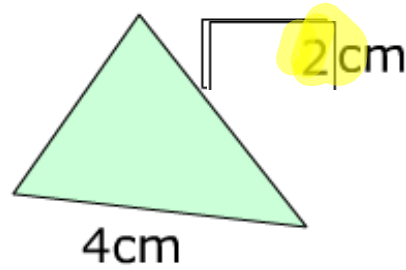
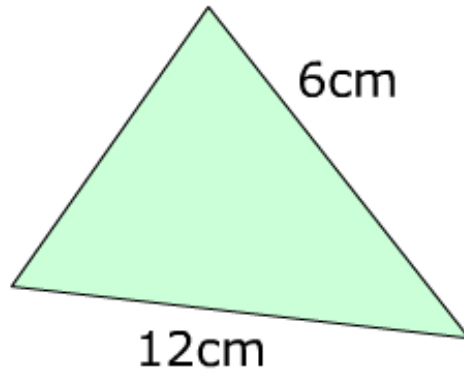
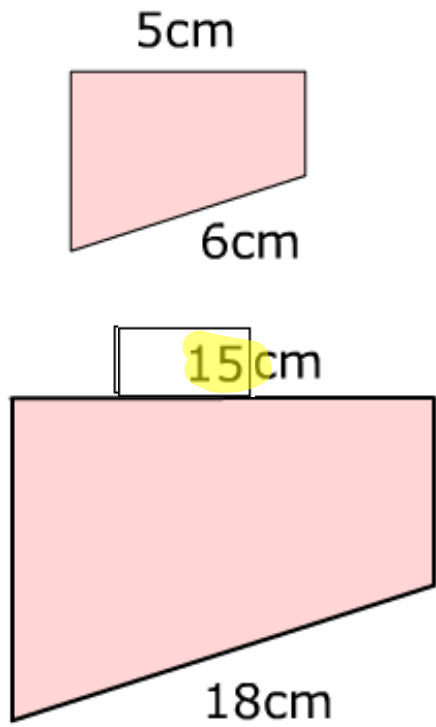
a =

b =

Find the missing lengths.

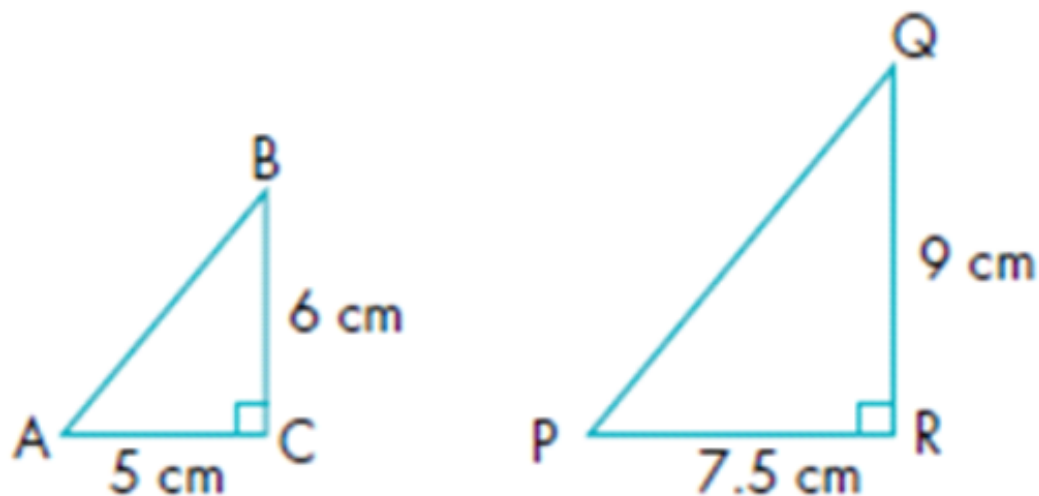


Find the missing lengths.



Similar Triangles

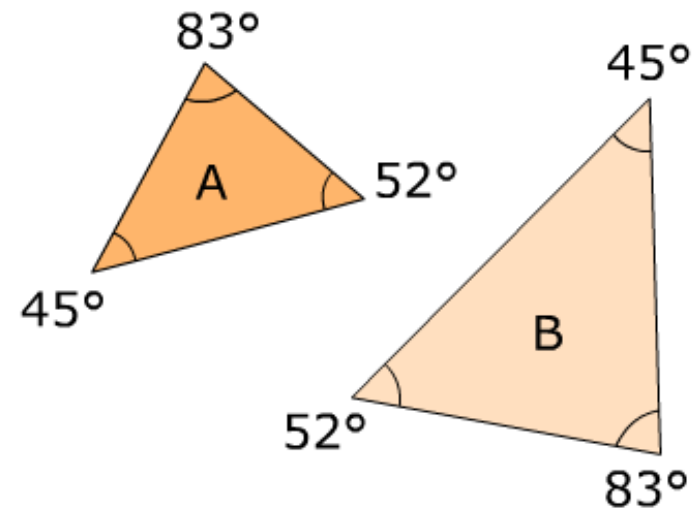
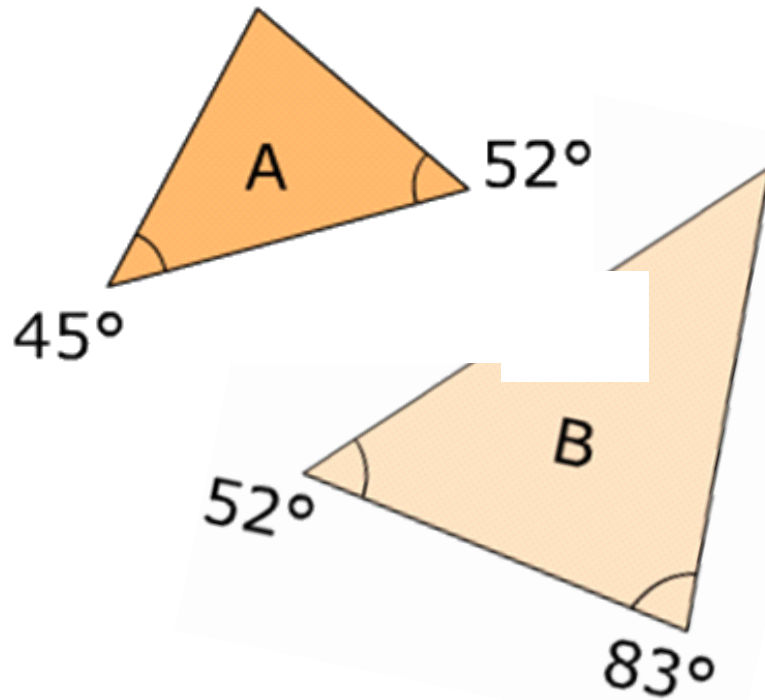
- a** Explain why these shapes are similar.



- b** Which angle corresponds to angle A ?
- c** Which side corresponds to side AC ?

Similar Triangles

Are these triangles similar?

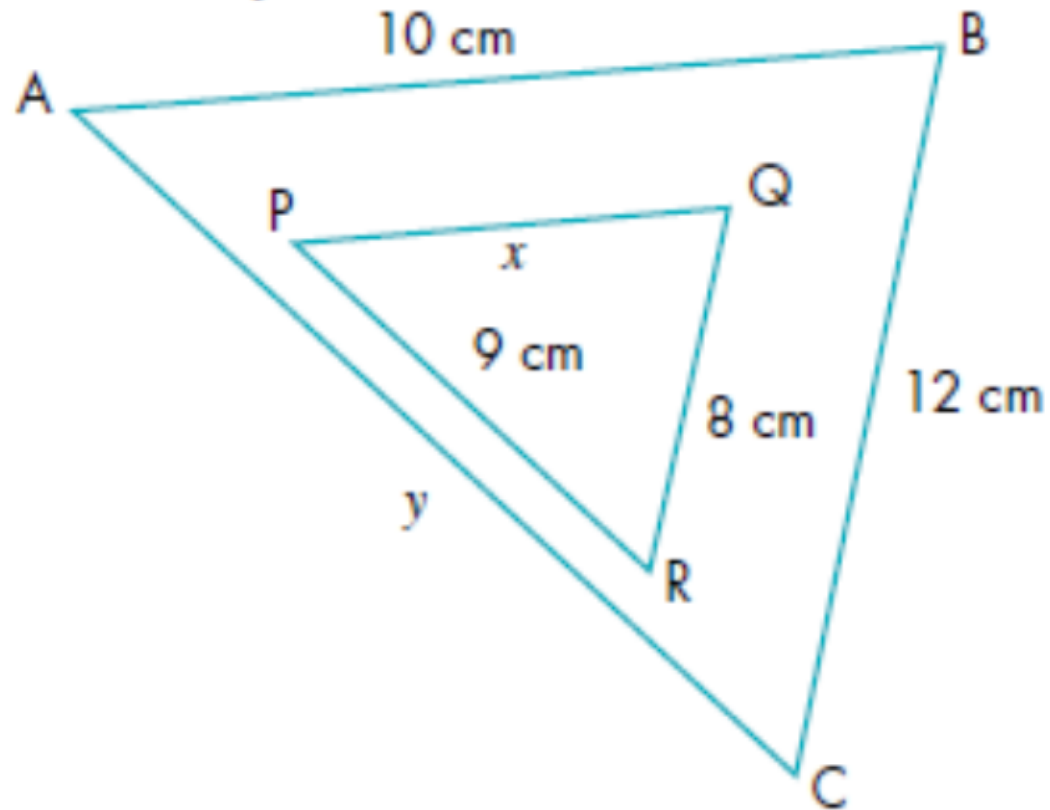


The angles are the same.

The triangles are similar.

These triangles are similar.

Find x and y .



$$\text{s.f} = \frac{12}{8} = 1.5$$

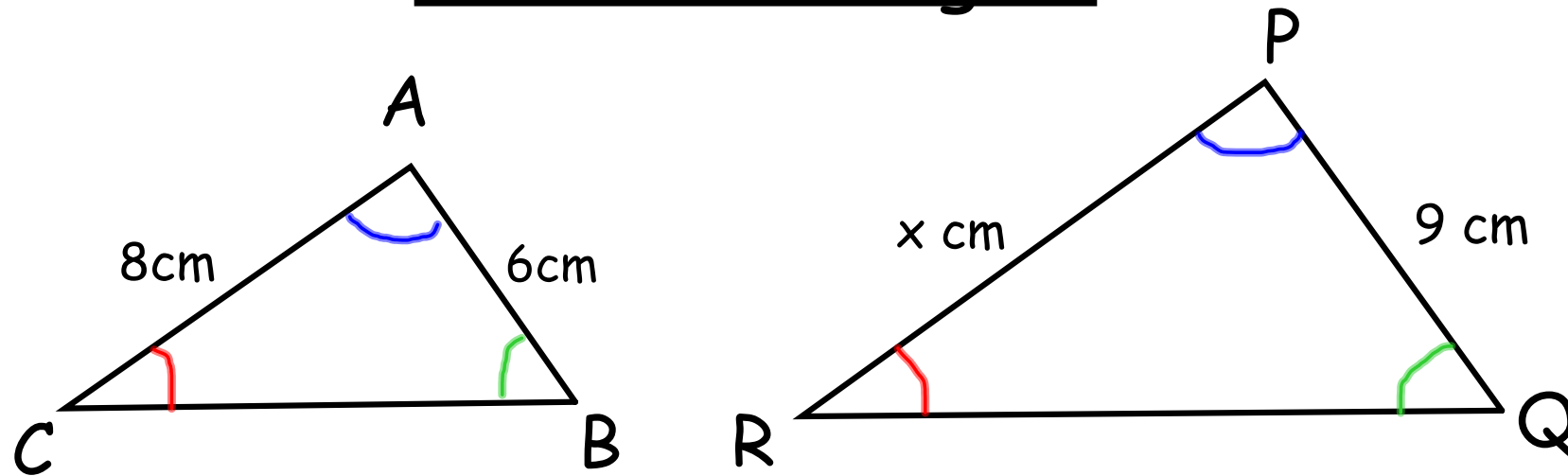
$$x = 10 \div 1.5$$

=

$$y = 9 \times 1.5$$

=

Similar Triangles

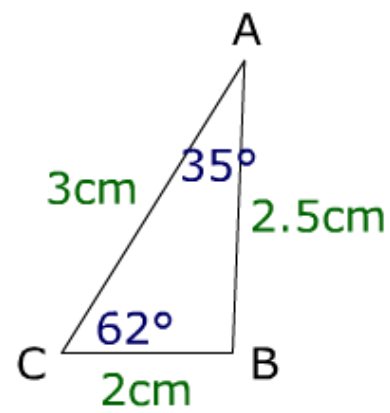
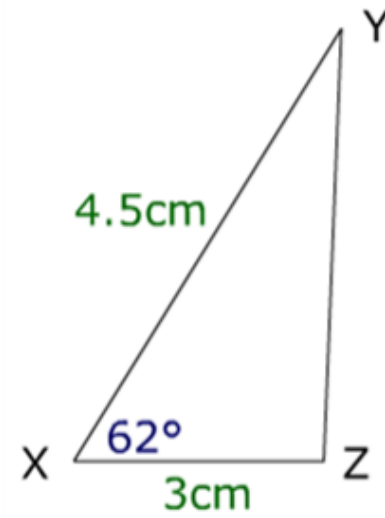
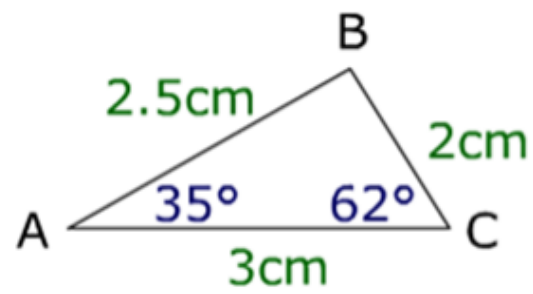


$$\frac{PR}{AC} = \frac{PQ}{AB}$$

$$\frac{x}{8} = \frac{9}{6}$$

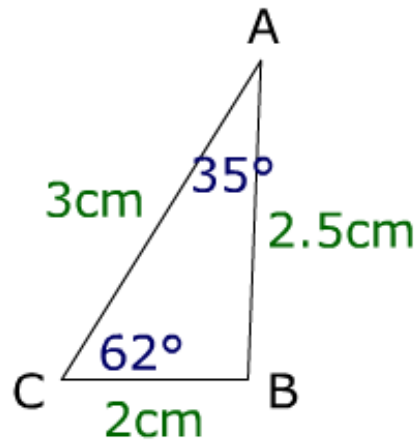
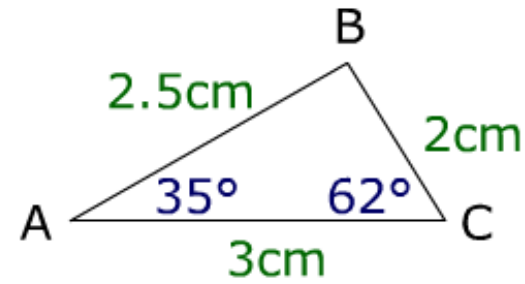
These triangles are similar.

Find: angle Y
the length of side YZ

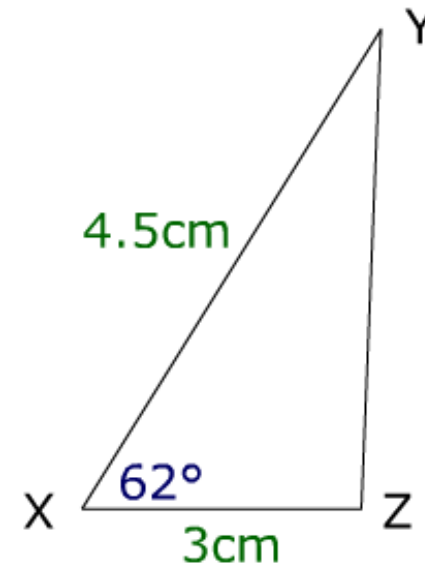


These triangles are similar.

Find: angle Y
the length of side YZ



angle Y =



$$\frac{XY}{CA} = \frac{4.5}{3} = 1.5$$

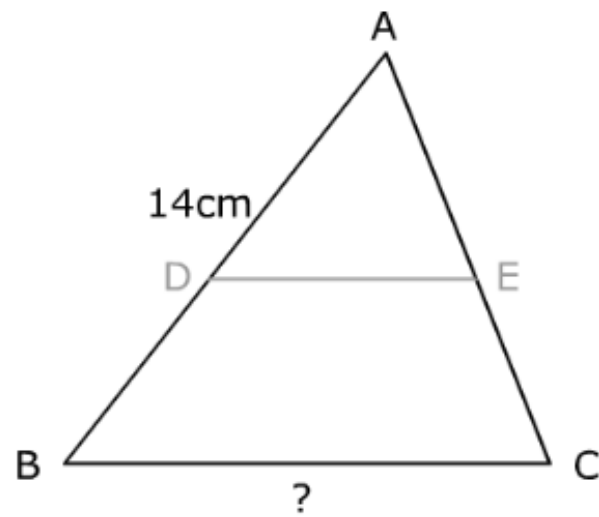
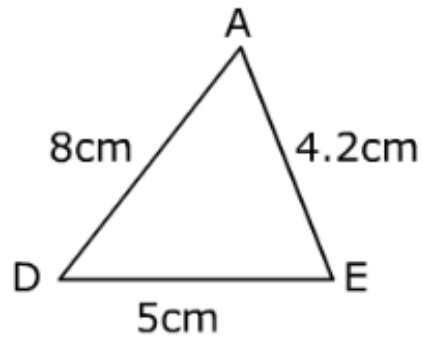
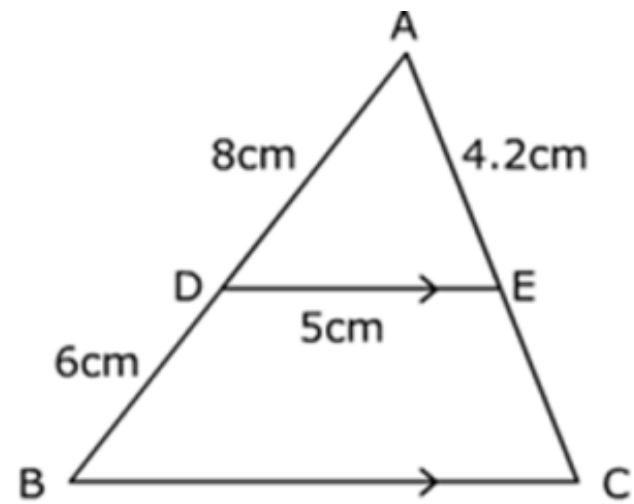
$$\frac{XZ}{CB} = \frac{3}{2} = 1.5$$

$$YZ = 2.5\text{cm} \times 1.5 = 3.75\text{cm}.$$

DE is parallel to BC.

Why are triangles ADE and ABC similar?

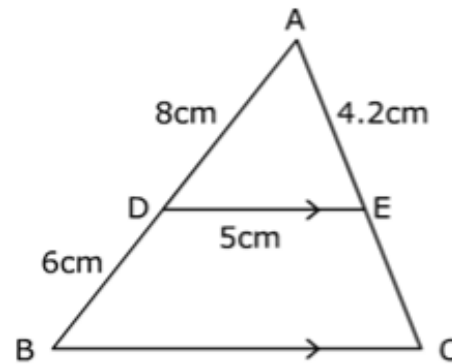
Find BC and EC.



DE is parallel to BC.

Why are triangles ADE and ABC similar?

Find BC and EC.

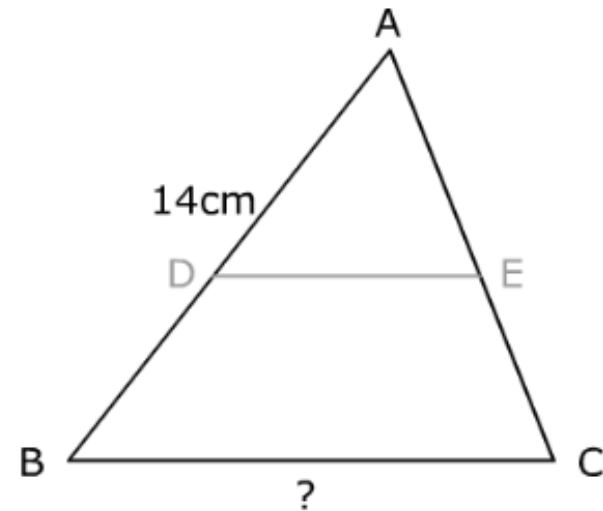
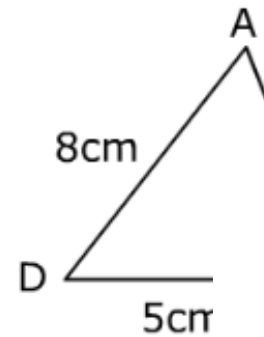


$$\text{scale factor} = \frac{14}{8} = 1.75$$

$$BC = 5\text{cm} \times 1.75 = 8.75\text{cm}$$

$$\begin{aligned} AC &= AE \times 1.75 \\ &= 4.2 \times 1.75 \\ &= 7.35 \end{aligned}$$

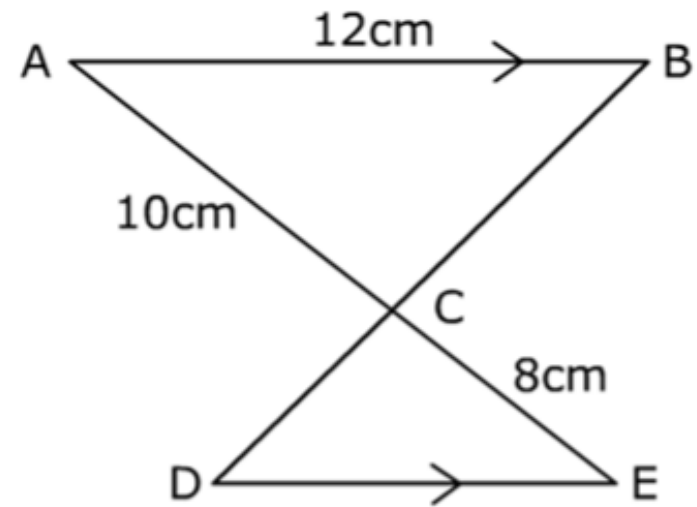
$$\begin{aligned} EC &= 7.35 - 4.2 \\ &= 3.15\text{cm} \end{aligned}$$



AB and DE are parallel lines.

Explain why triangles ABC and CDE are similar.

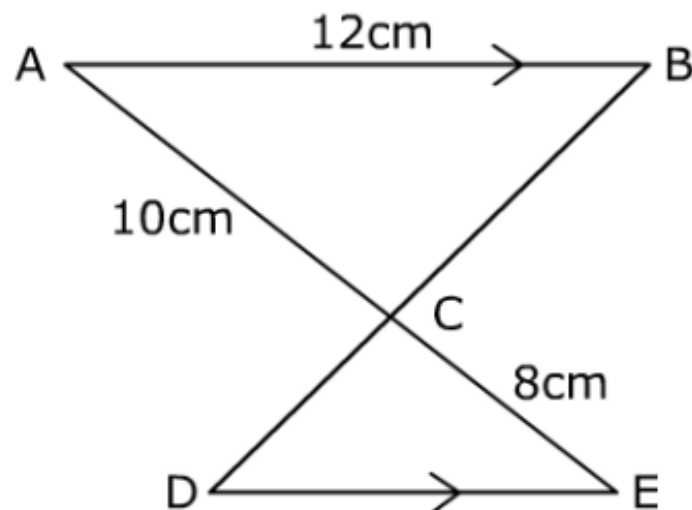
Find DE.



AB and DE are parallel lines.

Explain why triangles ABC and CDE are similar.

Find DE.



Angle ACB = angle DCE
(opposite angles)

Angle CAB = angle CED
(alternate angles on parallel lines)

Angle CBA = angle CDE
(alternate angles on parallel lines)

Find the scale factor.

Side AC corresponds to CE
(turn the triangle around to see this!)

$$\text{scale factor} = \frac{10}{8} = 1.25$$

To find DE we need to divide by the scale factor

$$\begin{aligned} \text{DE} &= 12\text{cm} \div 1.25 \\ &= 9.6\text{cm} \end{aligned}$$