

# SIMILAR TRIANGLES

Note Title

04/03/2009

(and other similar shapes)

Two shapes are SIMILAR if one is an enlargement of the other.

In this case,

- all their matching pairs of angles are equal
- all their matching pairs of sides will be in the same ratio

## Examples

①



(a) Find the length of PR

What side in ABC matches PR? Answer: AC (8cm)

Which side in ABC matches 7cm? Answer: AB (5cm)

matching sides  
↓

$$\frac{PR}{8} = \frac{7}{5}$$

matching sides  
↓

← sides from the same triangle.

$$\begin{aligned} (\times 8) \quad (\times 8) \\ PR &= \frac{7}{5} \times 8 \\ &= \frac{56}{5} = \underline{\underline{11.2 \text{ cm}}} \end{aligned}$$

(b) Find PQ

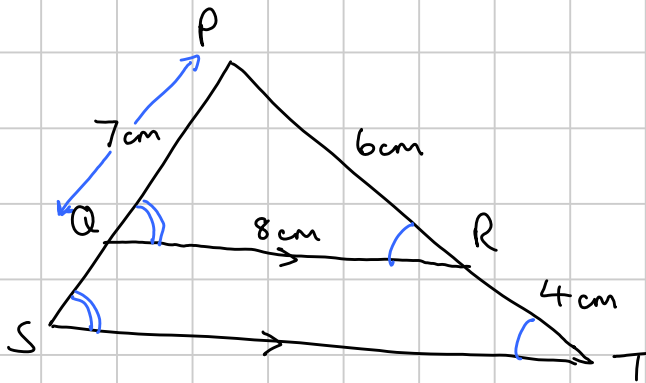
$$\frac{PQ}{10} = \frac{7}{5}$$

$$(\times 10) \quad (\times 10)$$

$$PQ = \frac{7}{5} \times 10$$

$$= \frac{70}{5} = \underline{\underline{14 \text{ cm}}}$$

②



(a) Explain why triangles PQR and PST are similar.

$$\hat{PQR} = \hat{PST} \quad (\text{corresponding angles in parallel lines})$$

$$\hat{PRQ} = \hat{PTS} \quad ( \quad " \quad )$$

$\hat{QPR}$  is in both triangles.

Since the angles are equal, the triangles are similar.

(b) Find ST

$$\frac{ST}{8} = \frac{10}{6}$$

$$(\times 8) \quad (\times 8)$$

$$ST = \frac{10}{6} \times 8 = \frac{80}{6} = \underline{\underline{13\frac{1}{3} \text{ cm}}}$$

(c) Find QS

Since QS is not a side of either triangle,  
first find PS then subtract 7

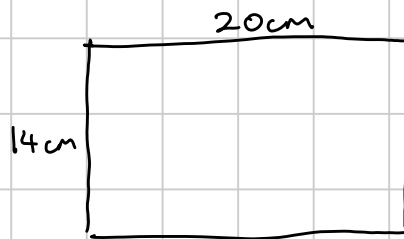
$$\frac{PS}{7} = \frac{10}{6}$$

( $\times 7$ )      ( $\times 7$ )

$$PS = \frac{10}{6} \times 7 = \frac{70}{6} = 11\frac{2}{3} \text{ cm}$$

$$QS = 11\frac{2}{3} - 7 = \underline{\underline{4\frac{2}{3} \text{ cm}}}$$

③



Are these rectangles similar?

Does  $\frac{12}{20} = \frac{8}{14}$  ?

$$0.6 = 0.571 \text{ ?}$$

No - so the shapes are NOT similar