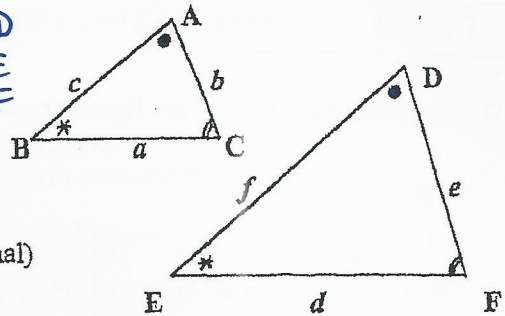


PROPERTIES OF SIMILAR TRIANGLES: Correspondence Chart!

If $\triangle ABC$ and $\triangle DEF$ are similar,

$A \rightarrow D$
 $B \rightarrow E$
 $C \rightarrow F$



a) the corresponding pairs of angles are equal
 $\angle A = \angle D$ $\angle B = \angle E$ $\angle C = \angle F$

b) the ratios of the corresponding sides are equal
 (meaning the corresponding sides are proportional)

$$\frac{a}{d} = \frac{b}{e} = \frac{c}{f}$$

c) the ratio of their areas is equal to the ratio of the squares of their corresponding sides

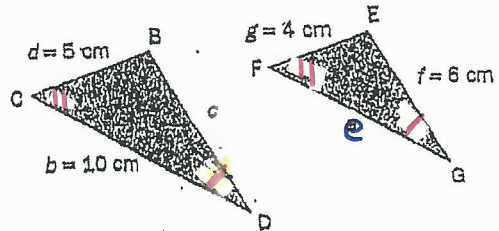
$$\frac{\text{area of } \triangle ABC}{\text{area of } \triangle DEF} = \frac{a^2}{d^2} = \frac{b^2}{e^2} = \frac{c^2}{f^2}$$

EXAMPLES:

1. $\triangle ABC \sim \triangle EFG$.

Find the values of e and c .

$B \rightarrow E$
 $C \rightarrow F$
 $D \rightarrow G$



$\angle C = \angle F$ (given)

$\angle B = \angle E$ (given)

$\angle D = \angle G$ (given)

$\triangle DCB \sim \triangle GFE$

$$\frac{CB}{FE} = \frac{BD}{EG} = \frac{DC}{GF} \rightarrow \frac{5}{4} = \frac{c}{6} = \frac{10}{e}$$

$$\frac{5}{4} = \frac{c}{6} \rightarrow 30 = 4c, \quad c = \frac{30}{4} = \frac{15}{2} = 7.5, \quad \rightarrow \frac{5}{4} = \frac{10}{e} \Rightarrow 5e = 40$$

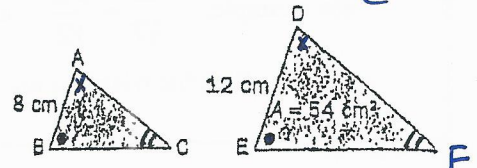
$$e = 8$$

2. $\triangle ABC \sim \triangle DEF$ ✓

$AB = 8$ cm and $DE = 12$ cm.

The area of $\triangle DEF$ is 54 cm².

Find the area of $\triangle ABC$.



$$\frac{A_{\triangle DEF}}{A_{\triangle ABC}} = \frac{DE^2}{AB^2} = \frac{12^2}{8^2} = \frac{144}{64} = \frac{9}{4}$$

$$\frac{54}{A_{\triangle ABC}} = \frac{9}{4} \rightarrow 9A_{\triangle ABC} = 216$$

$$A_{\triangle ABC} = \frac{216}{9} = 24 \checkmark$$

$$\therefore A_{\triangle ABC} = 24 \text{ cm}^2$$