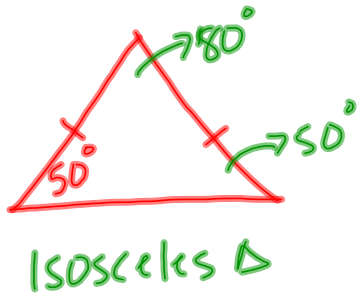


\*recall,

Sum of angles in a  $\triangle$  is  $180^\circ$



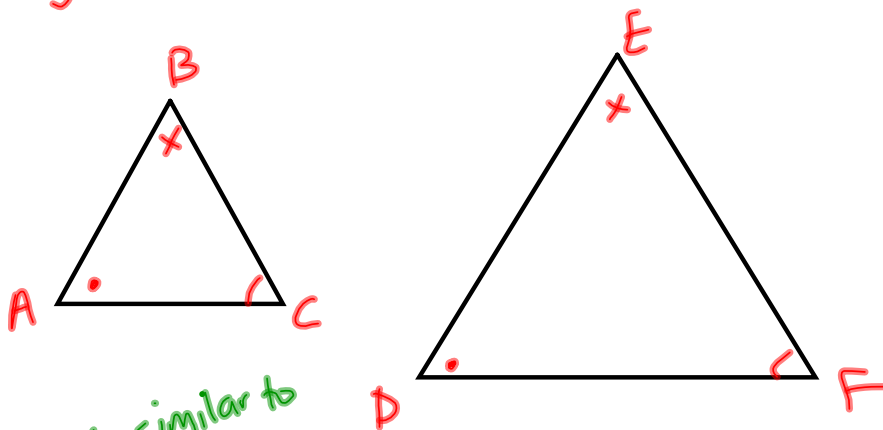
## Section 7.4 - Similar Triangles

\* two  $\triangle$ 's are similar if:

→ matching angles are equal DB

→ matching sides are proportional.

\* the order in which similar  $\triangle$ 's are named gives a lot of information.



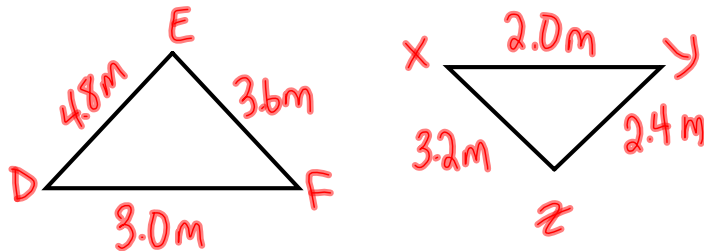
is similar to  
↓

$\triangle ABC \sim \triangle DEF$  } similarity statement

$$\begin{array}{l} \angle A = \angle D \\ \angle B = \angle E \\ \cdot \quad \cdot \quad \cdot \end{array} \quad \frac{AB}{DE} = \frac{BC}{EF} = \frac{AC}{DF}$$

## Ⓐ Identifying Similar Triangles

Example: Name the similar triangles



Solution: angle measures are not given, so we will need to look at side measurements.

In  $\triangle DEF$ : order the sides from shortest to longest

DF, EF, DE

In  $\triangle XYZ$ : order the sides from shortest to longest: XY, YZ, XZ

this means:  $\frac{DF}{XY}$ ,  $\frac{EF}{YZ}$ ,  $\frac{DE}{XZ}$

$$\frac{3}{2}, \frac{3.6}{2.4}, \frac{4.8}{3.2}$$

$$1.5, 1.5, 1.5$$

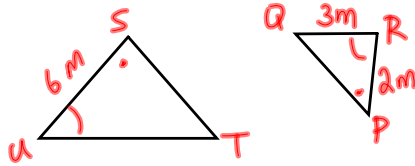
Since all scale factors are the same, the triangles are similar.

$$\triangle DEF \sim \triangle XZY$$

Ⓑ Using Similar Δ's to determine a length

Examples:

Ⓐ These two Δ's are similar. Find the length of TU.



Solution:  $\Delta UST \sim \Delta RPQ$

$$\frac{US}{RP} = \frac{ST}{PQ} = \frac{UT}{RQ}$$

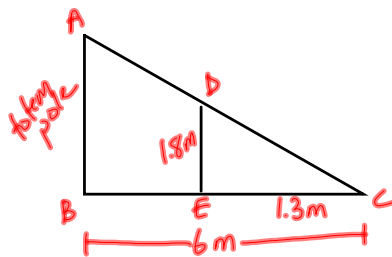
$$\frac{6}{2} = \frac{x}{3}$$

$$6(3) = 2x$$

$$\frac{18}{2} = \frac{2x}{2}$$

$$9m = x$$

ExⒸ: pg 346 in text



Solution:  $\Delta ABC \sim \Delta DEC$

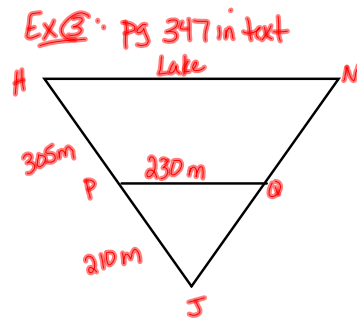
$$\frac{AB}{DE} = \frac{BC}{EC} = \frac{AC}{DC}$$

$$\frac{x}{1.8} = \frac{6}{1.3}$$

$$1.3x = 6(1.8)$$

$$\frac{1.3x}{1.3} = \frac{10.8}{1.3}$$

$$x = 8.3m$$



Solution:  $\triangle HNJ \sim \triangle PQJ$

$$\frac{HN}{PQ} = \frac{NJ}{QJ} = \frac{HJ}{PJ}$$

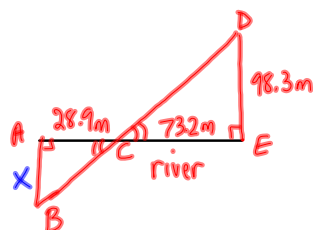
$$\frac{x}{230} = \frac{515}{210}$$

$$210x = 515(230)$$

$$\frac{210x}{210} = \frac{118450}{210}$$

$$x = 564 \text{ m}$$

Ex (4): pg 348 in text



Solution:  $\triangle ABC \sim \triangle EDC$

$$\frac{AB}{ED} = \frac{BC}{DC} = \frac{AC}{EC}$$

$$\frac{x}{98.3} = \frac{28.9}{73.2}$$

$$73.2x = 28.9(98.3)$$

$$\frac{73.2x}{73.2} = \frac{2840.87}{73.2}$$

$$x = 38.8 \text{ m}$$

Complek: pg 349-351

#'s: 4, 7, 9-12