Similar Δs + Indirect Measurement

- **Similar** - same shape, but dif. size ($\sim$)

$\Delta ABC \sim \Delta DEF$

(Angle letters are written in same order)

$\Delta ABC \sim \Delta DEF$

* Corresponding ($\angle$s of $\sim$ Δ and are $\cong$)

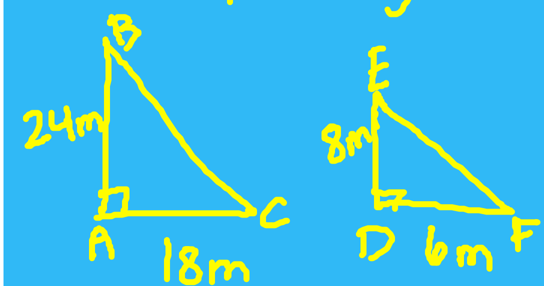
congruent

$\angle D \cong \angle A$

$\angle F \cong \angle C$

$\angle E \cong \angle B$

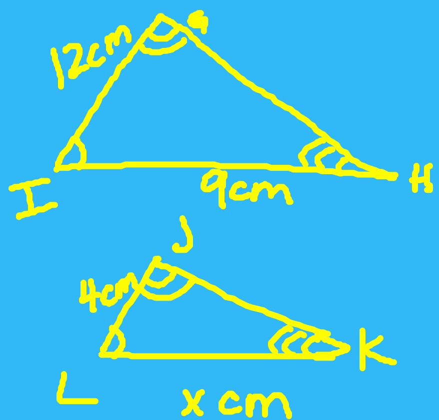
* Corresponding sides of Δs are proportional



* keep matching sides in same places when write proportion

$$\frac{\text{height}}{\text{base}} = \frac{\text{height}}{\text{base}} \quad \text{or} \quad \frac{b}{h} = \frac{b}{h}$$

$$\frac{24}{18} = \frac{8}{6} \qquad \frac{18}{24} = \frac{6}{8}$$



$\angle I \cong \angle L$

$\angle G \cong \angle J$

$\angle H \cong \angle K$

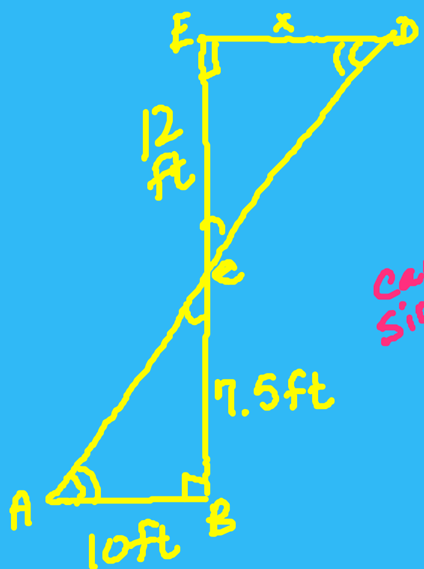
since all have $\cong$ $\angle$s the $\triangle$s are similar

$\triangle GHI \sim \triangle JKL$

$$\frac{\overline{IG}}{\overline{IH}} = \frac{12^{\div 3}}{9_{\div 3}} = \frac{4}{x} = \frac{\overline{LJ}}{\overline{LK}}$$

$$\boxed{3cm = x}$$

2)



$\triangle ABC \sim \triangle DEC$

can simplify $\frac{10}{7.5} = \frac{x}{12}$ OR $\frac{7.5}{10} = \frac{12}{x}$ $\frac{x}{10} = \frac{12}{7.5}$

$\frac{10}{x} = \frac{7.5}{12}$

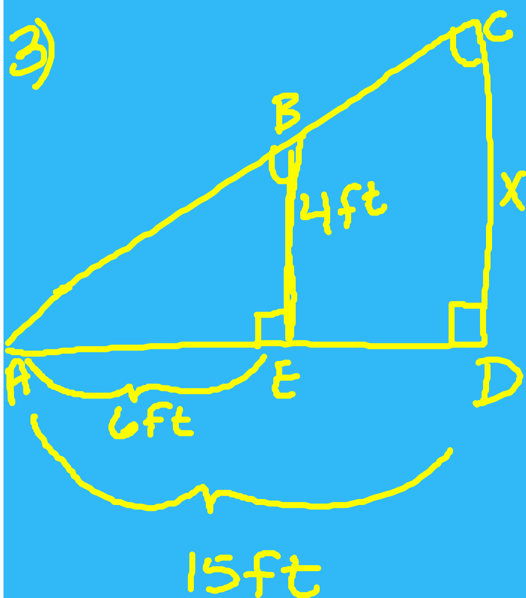
$\frac{2}{1.5} = \frac{x}{12}$

$\frac{24}{1.5} = \frac{\cancel{1.5}x}{\cancel{1.5}}$

$\boxed{16ft = x}$

$$\begin{array}{r} 016. \\ 1.5\overline{)24.0} \\ -15 \\ \hline 90 \\ -90 \\ \hline 0 \end{array}$$

3)



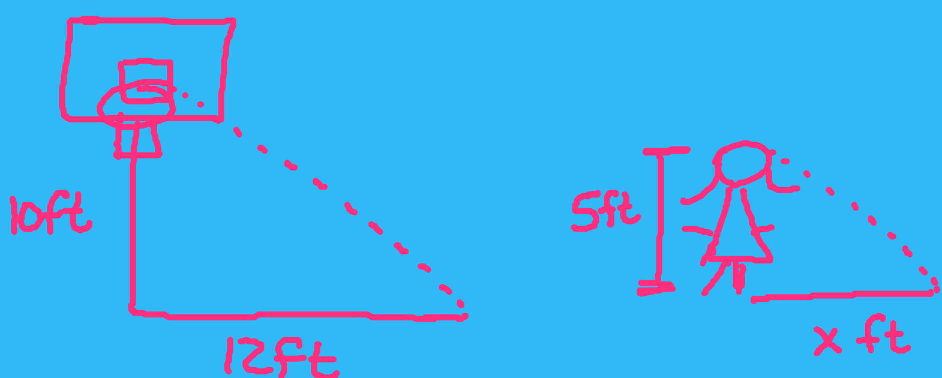
$\Delta ACD \sim \Delta ABE$

$$\frac{6}{15} = \frac{4}{x} \quad \text{OR} \quad \frac{4}{6} = \frac{x}{15}$$

$$\frac{2^{\cdot 2}}{5_{\cdot 2}} = \frac{4}{x} \qquad \frac{2^{\cdot 5}}{3_{\cdot 5}} = \frac{x}{15}$$

$$\boxed{10ft = x} \qquad \boxed{10ft = x}$$

#5 from SG 11-6



use to set up

$$\frac{\text{pole}}{\text{shadow}} = \frac{\text{girl}}{\text{shadow}}$$

$$\frac{10^{\div 2}}{12_{\div 2}} = \frac{5}{x}$$

$$\boxed{6\text{ft} = x}$$