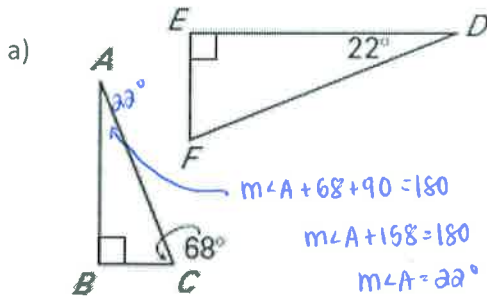




- I can determine if triangles are similar using AA~
- I can use AA~ to set up and solve proportions.

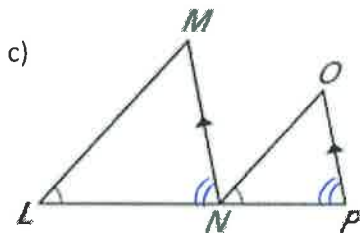
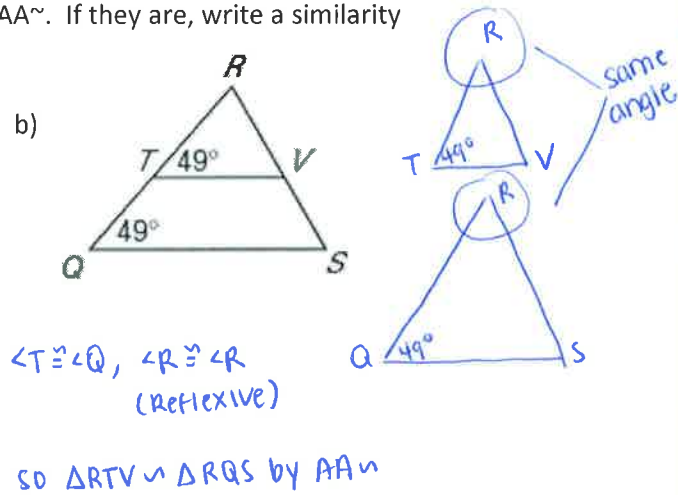
<p><b>Angle-Angle Similarity (AA~)</b></p>	<p>If two angles of one triangle are congruent to two angles of a second triangle, then the triangles are similar.</p>	<p><math>\Delta JKL \sim \Delta XYZ</math></p>
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**Example 1 :** Determine if the following triangles are similar by AA~. If they are, write a similarity statement. If they are not, explain.



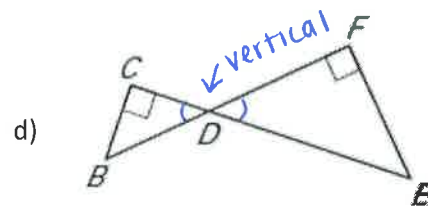
$\angle B \cong \angle E, m\angle A = m\angle D$

so  $\Delta ABC \sim \Delta DEF$  by AA~



$\angle L \cong \angle ONP; \angle MNL \cong \angle OPN$   
(corresponding)

so  $\Delta MLN \sim \Delta ONP$  by AA~



$\angle C \cong \angle F, \angle CDB \cong \angle FDE$

so  $\Delta CBD \sim \Delta FED$  by AA~

**Example 2 :** Given that  $\overline{YW} \parallel \overline{ZV}$  and  $\frac{XW}{XV} = \frac{YW}{ZV}$ , please solve for XW.

$$\frac{X}{X+5} = \frac{24}{34}$$

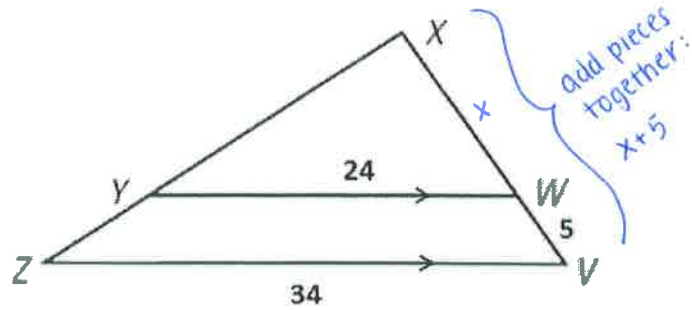
$$24(X+5) = 34X$$

$$24X + 120 = 34X$$

$$120 = 10X$$

$$X = 12 \Rightarrow$$

$$\boxed{XW = 12}$$



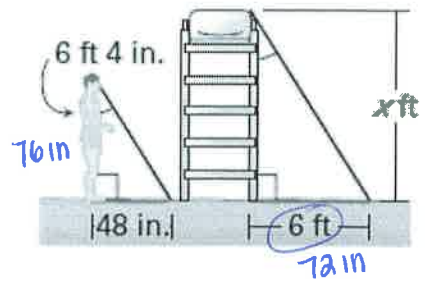
Applications of AA ~

**Example 3 :** A lifeguard is standing beside the lifeguard chair on a beach. The lifeguard is 6 feet 4 inches tall and casts a shadow that is 48 inches long. The chair casts a shadow that is 6 feet long. How tall is the chair?

convert to one unit

Lifeguard:  $\frac{6\text{ft } 4\text{ inches}}{\times 12} = \frac{76\text{in} + 4\text{in}}{76\text{in} + 4\text{in}} = 76\text{in}$

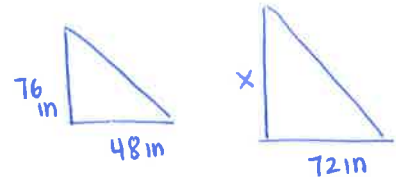
chair:  $6\text{ft} \times 12 = 72\text{in}$



$$\frac{\text{Life}}{\text{chair}} = \frac{76}{x} = \frac{48}{72}$$

$$48x = 5472$$

$$\boxed{x = 114\text{ inches}} = 12 = \boxed{9.5\text{ ft}}$$



**Example 4 :** In the figure,  $\overline{BD} \parallel \overline{CE}$ . Ramon wants to know the distance across the lake.

Small  $\Delta$  :  $\frac{\text{heights}}{\text{big } \Delta} = \frac{40}{d} = \frac{320}{482}$

$$320d = 19280$$

$$\boxed{d = 60.25\text{ m}}$$

