

Prove that $\Delta TAB \sim \Delta LES$

$$\frac{3}{6} = \frac{5}{10}$$

$$\frac{1}{2} = \frac{1}{2} \quad \angle B \cong \angle S$$

SAS \sim

Side-Angle-Side Similarity (SAS \sim)

If the lengths of two sides are proportional and their included angle are congruent, on two different triangles, then the triangles are similar.

Suppose that you have $\triangle TRA$ and $\triangle SED$, and $\frac{TR}{SE} = \frac{TA}{SD}$. Identify the criterion that proves that the two triangles are similar given each additional statement.

$$\angle R \cong \angle E$$

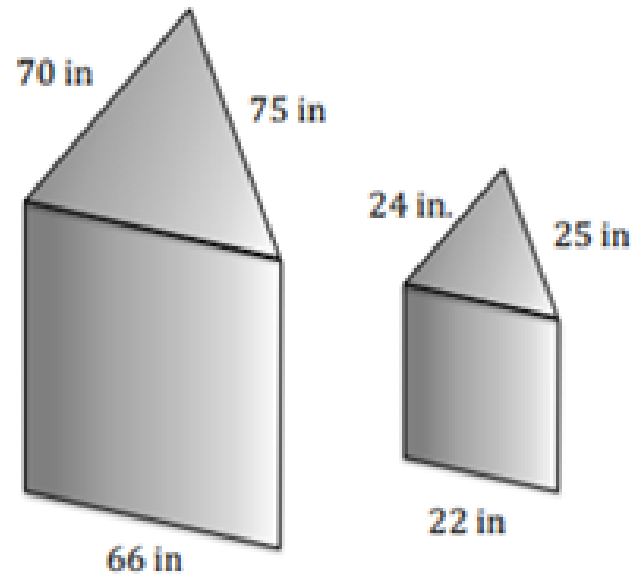
SAS \sim

$$\frac{TR}{SE} = \frac{RA}{ED}$$

SSS \sim

Practice:

1. An artist is designing a sculpture for the town square that will contain two triangular solids. The artist wants the triangles in the bases of each solid to be similar.



a. Are the triangles similar? Justify your answer.

$$\frac{75}{25} \stackrel{?}{=} \frac{70}{24} \stackrel{?}{=} \frac{66}{22} \quad \text{Not } \sim$$
$$3 \neq 2.9167 \neq 3$$

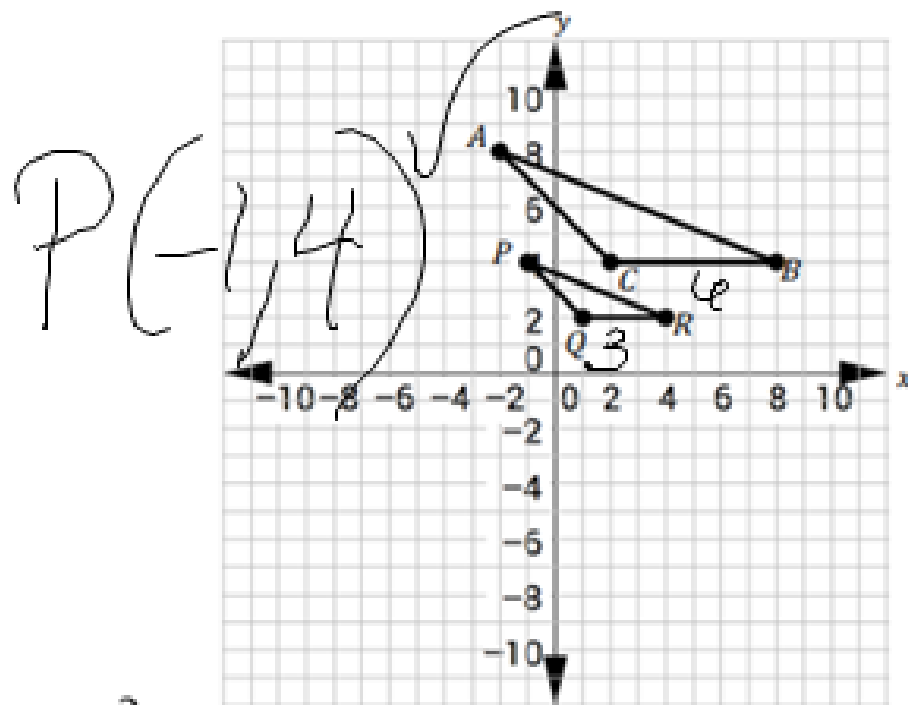
- b. If the triangles are not similar, what measurement(s) could be changed to make them similar? Justify your answer.

$$\boxed{70}$$

$$\frac{x}{24} = \frac{3}{1}$$

$$\frac{72}{24} = \frac{3}{1}$$

$$24(3) = 72$$



$$\frac{3}{6} = \frac{1}{2}$$

2.

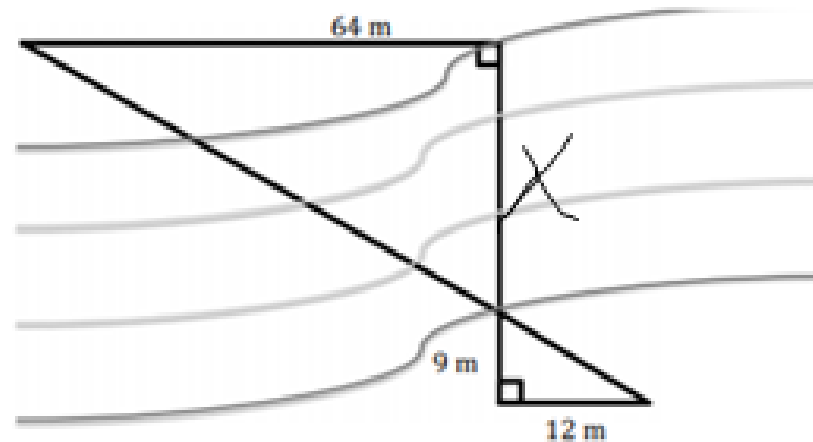
Prove $\triangle ACB \sim \triangle PQR$ by applying properties of transformations. Justify your steps.

$$(x, y) \rightarrow \left(\frac{1}{2}x, \frac{1}{2}y\right)$$

$$A(-2, 8) \rightarrow \left[\frac{1}{2}(-2), \frac{1}{2}(8)\right]$$

$$\rightarrow (-1, 4)$$

3. A surveyor is measuring the width of a river for a future bridge.



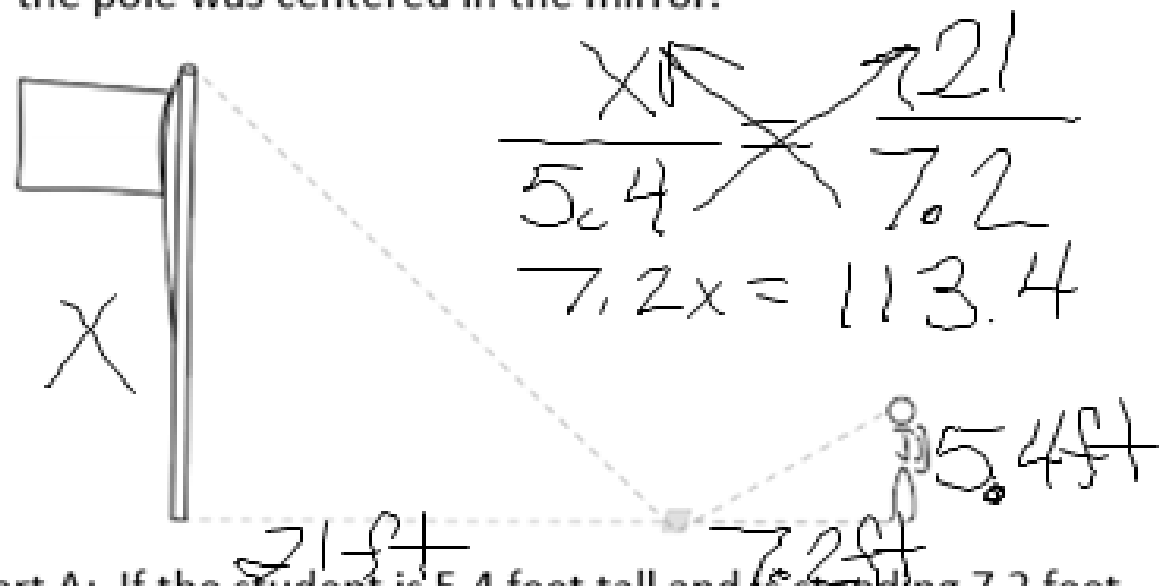
- a. What similarity criterion can be used to prove that the triangles are similar?

AA~

- b. Use the properties of similar triangles to set up a proportion and determine the width of the river.

$$\frac{X}{9} = \frac{64}{12} \quad 12x = 576$$
$$X = 48m$$

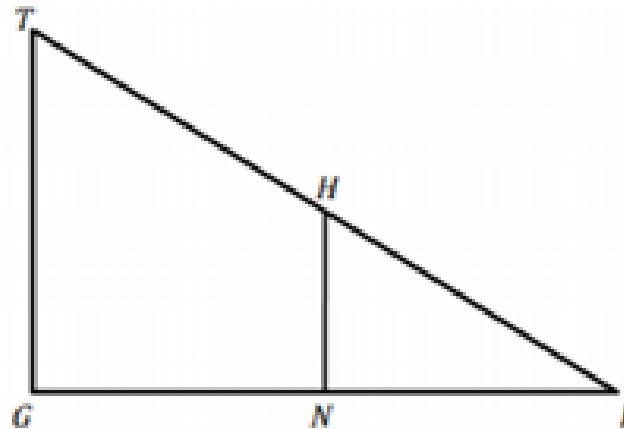
4. Mrs. Robinson assigned her class a project to find the height of the flagpole. The students could not easily measure the height, so they had to use their knowledge of similar triangles to determine the height of the flagpole. One student placed a mirror on the ground 21 feet from the base of the flagpole and backed up until the reflection of the top of the pole was centered in the mirror.



Part A: If the student is 5.4 feet tall and is standing 7.2 feet from the mirror, how tall is the flagpole?

$$x = 15.75 \text{ ft}$$

Which of the following could be used to prove that $\triangle HIN$ and $\triangle TIG$ are similar? Select all that apply.



- N is the midpoint of \overline{GI}
- $\overline{TG} \parallel \overline{HN}$
- $\angle T \cong \angle I$
- $\overline{TG} \perp \overline{IG}$
- \overline{HN} bisects \overline{IG} and \overline{TI}
- $\triangle TIG$ is dilated by a scale factor less than 1 centered at point I .