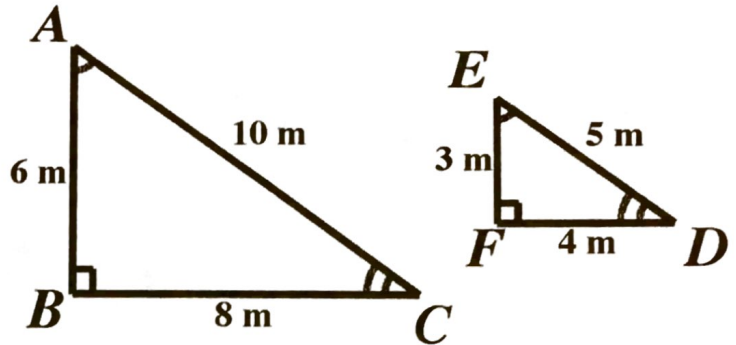


Vocabulary – Similar Polygons:

* Two polygons that have \cong angles & sides are proportional

* Dilation!



Vocabulary – Similarity Statements:

- we say that the 2 Δ 's are similar
* Placement / order of the letters matters!

$\Delta ABC \sim \Delta EFD$

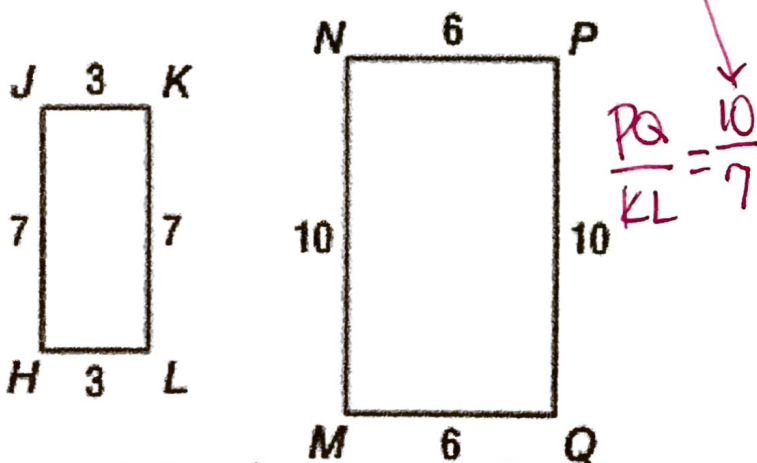
Vocabulary – Statement of Proportionality: * Helps us see the scale factor!

$$\frac{AB}{EF} = \frac{BC}{FD} = \frac{CA}{DE}$$

on shape / other shape

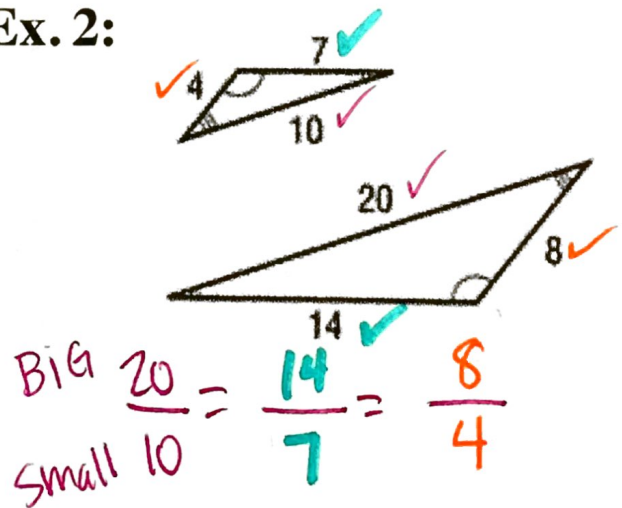
Determine whether rectangle *HJKL* is similar to rectangle *MNPQ*. Explain.

Ex. 1:



NO, there is NO scale that works for all sides!

Ex. 2:

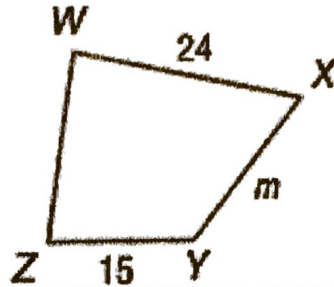
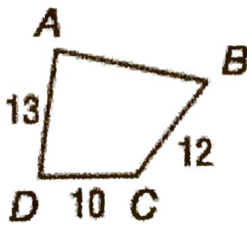


Yes, because there is a scale factor & it is 2.

The following figures are similar. Write the similarity statements for each set of similar figures. List all pairs of congruent angles and write the statements of proportionality for all corresponding sides.

$$\underline{S.S.} \quad \square ABCD \sim \square WXYZ$$

Ex. 3:



$$\begin{aligned} \angle A &\cong \angle W \\ \angle B &\cong \angle X \\ \angle C &\cong \angle Y \\ \angle D &\cong \angle Z \end{aligned}$$

$$\text{S.o.P} \quad \frac{AB}{WX} = \frac{BC}{XY} = \frac{CD}{YZ} = \frac{DA}{ZW}$$

Proportion

Review:

Find the value of

x.

$$\text{Ex. 4: } \frac{x}{15} = \frac{7}{21}$$

$$\frac{105}{21} = \frac{x \cdot 21}{21}$$

$$5 = x$$

$$\text{Ex. 5: } \frac{x}{23} = \frac{34}{85}$$

$$\frac{782}{85} = \frac{85x}{85}$$

$$9.2 = x$$

$$\text{Ex. 6: } \frac{5}{8} = \frac{3}{x}$$

$$\frac{24}{5} = \frac{5x}{5}$$

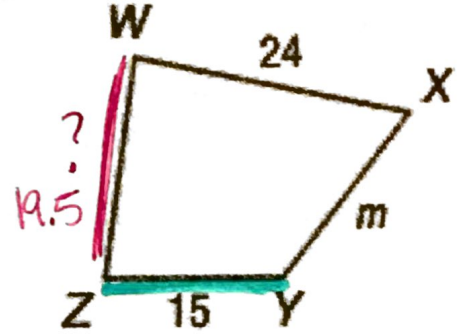
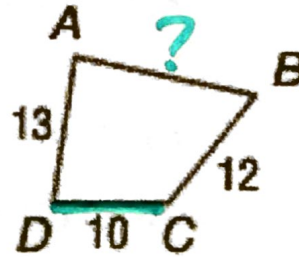
$$x = 4.8$$

Find each missing measure.

Ex. 7: $WZ = 19.5$

$$\frac{13}{?} = \frac{10 \text{ small}}{15 \text{ BIG}}$$

$$\frac{10 \cdot ?}{10} = \frac{13 \cdot 15}{10}$$



Ex. 8: $AB = 16$

$$\frac{15}{10} = \frac{24 \text{ BIG}}{? \text{ small}}$$

Scale Factor:

model : actual

$$2 : 65$$

$$\rightarrow 4 : \underline{\underline{130}} \text{ inches}$$

Ex. 9: The scale factor from a model car to the actual car is $2:65$. If the axel on the model car is 4 inches long, how long is the actual axel of the car?

$$\frac{2}{4} = \frac{65}{x}$$

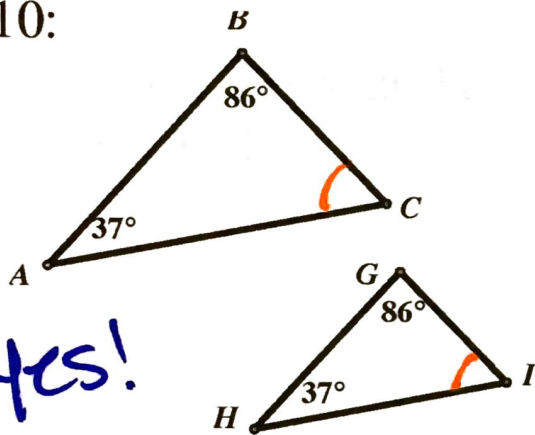
Angle-Angle (AA) Similarity

If 2 \angle 's are equal between
the 2 Δ 's, then the 3rd \angle 's are equal!

*Then, the 2 Δ 's are Similar!!

Determine whether the triangles are similar. If so, write a similarity statement.

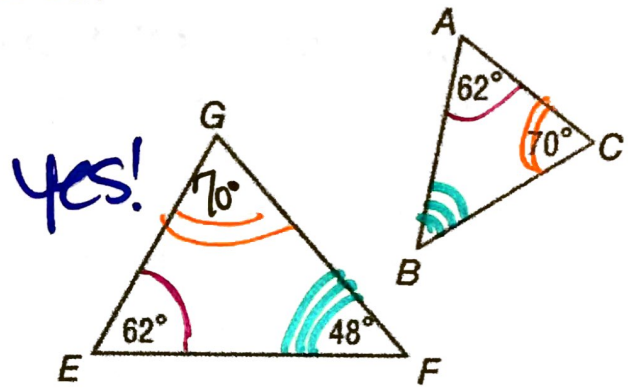
Ex. 10:



Yes!

$$\Delta ABC \sim \Delta HGI$$

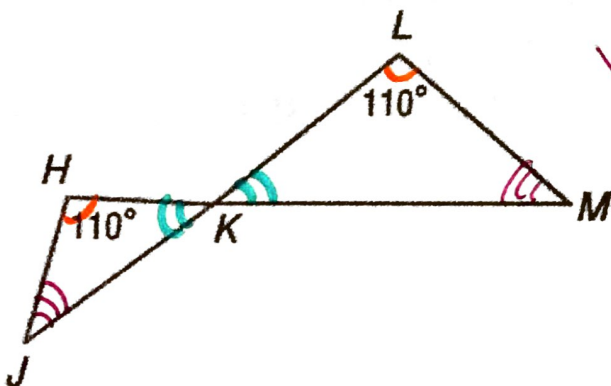
Ex. 11:



Yes!

$$\Delta EGF \sim \Delta ACB$$

Ex. 12:



Yes!

$$\Delta JKH \sim \Delta MKL$$

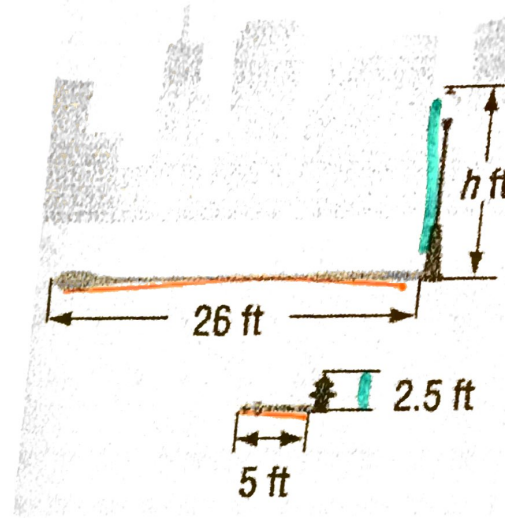
Ex. 13: A fire hydrant 2.5 feet high casts a 5-foot shadow. How tall is a street light that casts a 26-foot shadow at the same time? Let h represent the height of the street light.

$$\frac{26}{5} = \frac{h}{2.5}$$

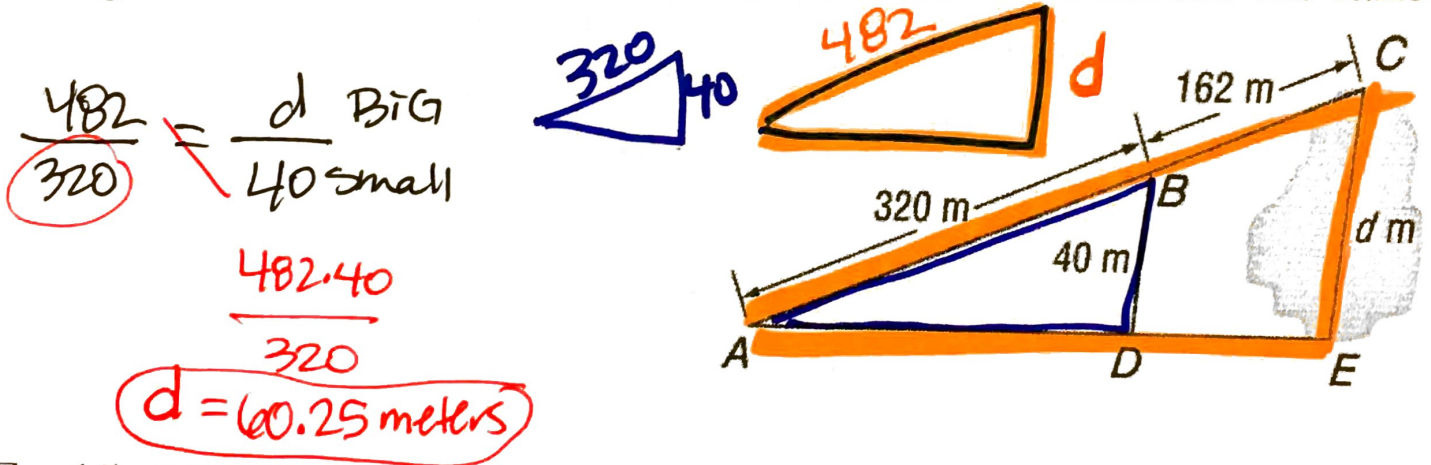
Big Δ
Small Δ

$$h = 13 \text{ feet}$$

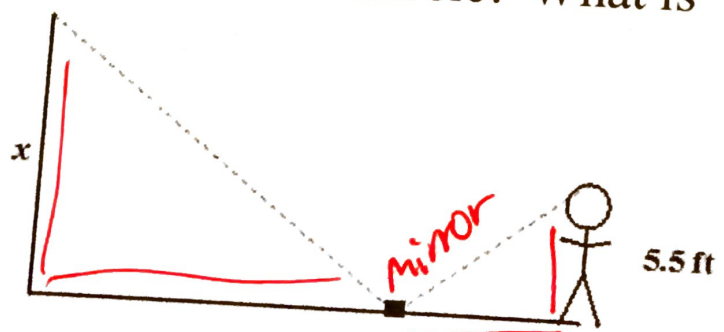
$$\frac{26 \cdot 2.5}{5}$$



Ex. 14: In the figure at the right, triangle DBA is similar to triangle ECA . Ramon wants to know the distance across the lake.

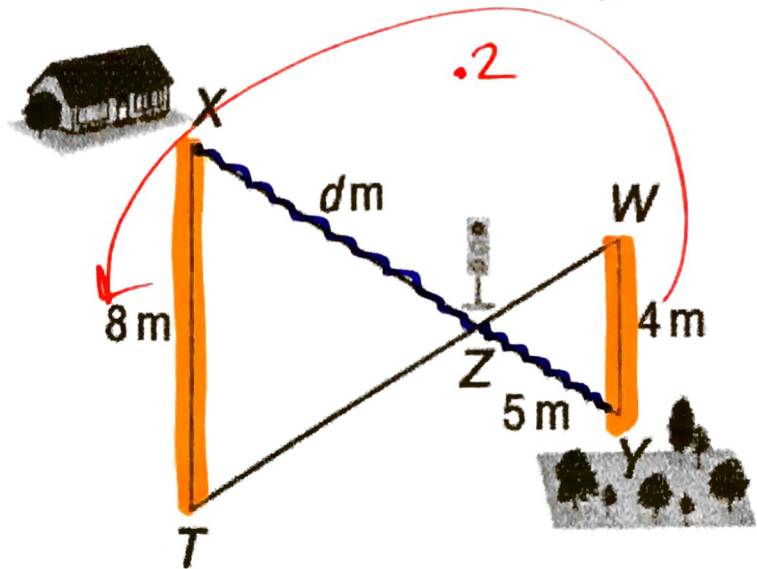


Ex. 15: Mary is standing next to the flag pole outside the school. She uses a mirror to help her calculate the height of the flag pole. Mary is 5.5 feet tall and she is standing 2 feet from the mirror. The mirror was placed 11 feet from the base of the flagpole. What is the height of the flagpole?



Ex. 16: Find the distance from the house to the street light.

$d = 10\text{m}$
Use scale factor!



Ex. 17: The plans for a set of stairs are shown below. Using points X and Z, find the slope of the line down the stairs. Then verify that the slope is the same at a different location by choosing a different set of points.

$$\frac{2}{3} = \frac{4}{6} = \frac{6}{9}$$

all = slopes,

so all 3
similar Δ 's

