

Name _____
Date _____

Exploring Similar Figures

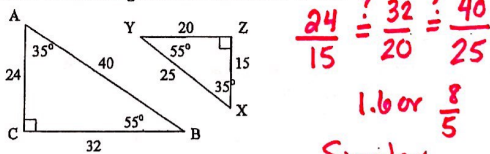
Similar Figures – Polygons that have the same shape, but different size.

Corresponding – Having the same position.

Two polygons are similar if:

1. corresponding angles are congruent AND
2. the lengths of corresponding sides are in proportion, called the **scale factor**.

Show if the triangles below are similar or not.



$$\frac{24}{15} \stackrel{?}{=} \frac{32}{20} \stackrel{?}{=} \frac{40}{25}$$

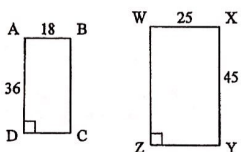
$$1.6 \text{ or } \frac{8}{5}$$

Similar

When two polygons are similar, we can write a similarity statement using the symbol " \sim ".

$$\triangle ACB \sim \triangle XZY$$

1. Are the following rectangles similar?

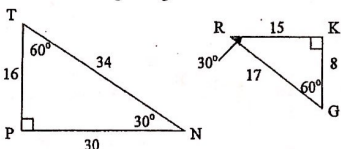


$$\frac{18}{25} \stackrel{?}{=} \frac{36}{45}$$

$$.72 \neq .8$$

NOT Similar

2. Are the following triangles similar?



$$\triangle TNP \sim \triangle GRK$$

$$\frac{16}{8} \stackrel{?}{=} \frac{30}{15} \stackrel{?}{=} \frac{34}{17}$$

↑ ↑ ↑
2

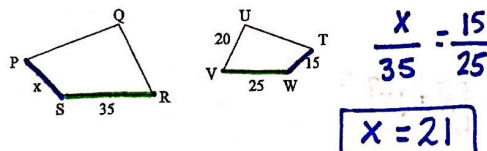
Similar

Name _____
Date _____

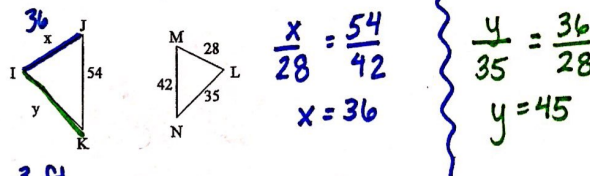
Similar Figures

Given two figures are similar, corresponding sides must be in proportion. Therefore, we can write a proportion to find the missing side length of one of the figures.

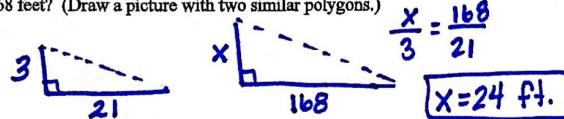
1. Given quadrilateral PQRS \sim TUVW, write a proportion to find the length of PS.



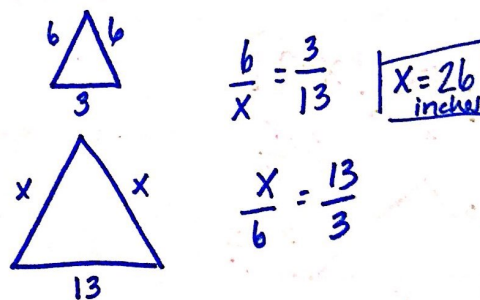
2. Given $\triangle IJK \sim \triangle LMN$, Find the length of \overline{IJ} and then the length of \overline{IK} .



3. If a 36-inch yardstick casts a 21-foot shadow, how tall is a building whose shadow is 168 feet? (Draw a picture with two similar polygons.)



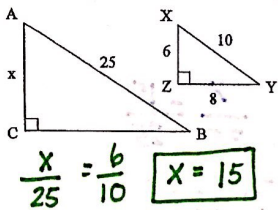
4. Sam wants to enlarge a triangle with sides 3, 6 and 6 inches. If the shortest side of the new triangle is 13 inches, how long will the other two sides be?



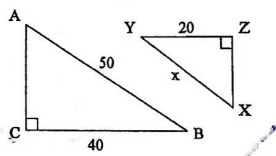
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Date _____

Find the missing side lengths in each pair of similar figures.

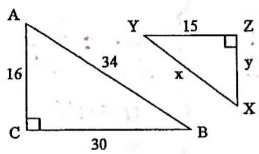
1. $\triangle ABC \sim \triangle XYZ$



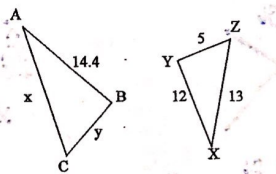
2. $\triangle ABC \sim \triangle XYZ$



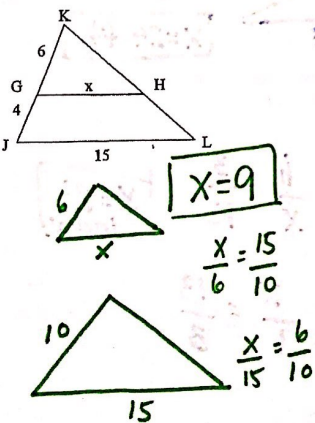
3. $\triangle ABC \sim \triangle XYZ$



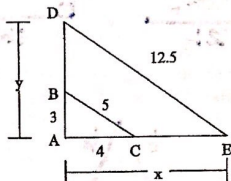
4. $\triangle ABC \sim \triangle XYZ$



5. $\triangle JKL \sim \triangle GKH$

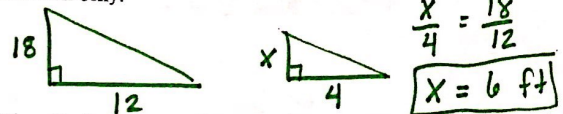


6. $\triangle ABC \sim \triangle ADE$



Use similar triangles to find the missing information.

7. A giraffe is 18 feet tall and casts a shadow of 12 feet. Corry casts a shadow of 4 feet. How tall is Corry?



8. When a Ferris wheel casts a 20-meter shadow, a man 1.8 meters tall casts a 2.4-meter shadow. How tall is the Ferris wheel?

9. A flagpole casts a shadow 28 feet long. A person standing nearby casts a shadow eight feet long. If the person is six feet tall, how tall is the flagpole?

10. A photograph measuring four inches wide and five inches long is enlarged to make a wall mural. If the mural is 120 inches wide, how long is the mural?

11. A 9-foot ladder leans against a building six feet above the ground. At what height would a 15-foot ladder touch the building if both ladders form the same angle with the ground?

12. Chris wants to reduce a triangular pattern with sides 16, 16 and 20 centimeters. If the longest side of the new pattern is to be 15 cm, how long should the other two sides be?