Vocabulary

● Review

Do the ratios in each pair form a *proportion*? Explain.

1. $\frac{2}{5}$ and $\frac{10}{25}$

2. $\frac{1}{3}$ and $\frac{30}{100}$

● Vocabulary Builder

similar (adjective) SIM **uh lur**

Related Word: similarly (adverb)

Definition: Objects are **similar** if they are alike, but not necessarily identical.

Main Idea: In mathematics, **similar** figures have the same shape, but not necessarily the same size.

similar figures

same shape   different size

● Use Your Vocabulary

3. Explain how a lion and a giraffe are *similar*.
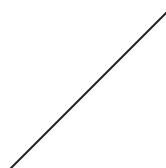
How is a lion like a giraffe?

How is a lion different from a giraffe?

**4.** Consider each pair of figures. Circle the figures that are *similar*.

The symbol ~ means "is similar to." In Problem 1 below, $\triangle ABC \sim \triangle DEF$.

In similar figures, the measures of corresponding angles are equal, and corresponding side lengths are in proportion. In Problem 1, the pairs of corresponding sides are $\overline{AB}$ and $\overline{DE}$, $\overline{AC}$ and $\overline{DF}$, and $\overline{BC}$ and $\overline{EF}$.

Problem 1 **Finding the Length of a Side**

Got It? In the diagram, $\triangle ABC \sim \triangle DEF$. What is AC?
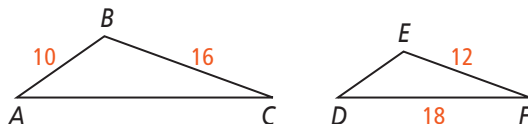
5. Underline the correct word or words to complete the sentence.

Because the triangles are similar, the ratios of the corresponding sides are

equal / not equal .

6. Use the diagram above. Circle the ratio that forms a proportion with $\frac{BC}{EF}$.

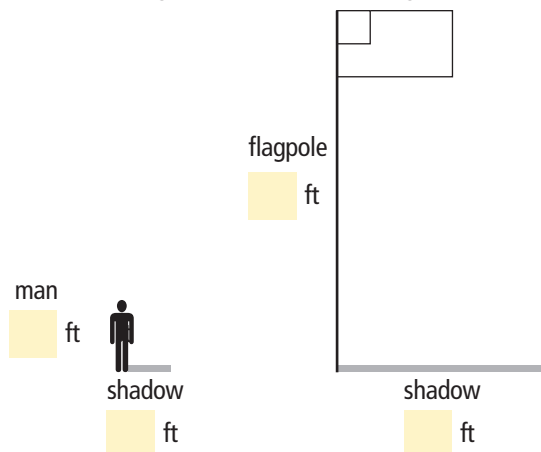| $\frac{AC}{DE}$ | $\frac{AC}{EF}$ | $\frac{AC}{DF}$ | $\frac{AC}{AB}$ |

7. Use the ratios from Exercise 6 to write a proportion. Solve your proportion for AC.

Problem 2 **Applying Similarity**

Got It? A man who is 6 ft tall is standing next to a flagpole. The shadow of the man is 3.5 ft and the shadow of the flagpole is 17.5 ft. What is the height of the flagpole?

8. Label the diagram. Let $h =$ the height of the flagpole.

Lesson 2-8

9. Complete the reasoning model below.

Think	Write
First I write a proportion to find the height, h, of the flagpole.	$\dfrac{6}{\boxed{}} = \dfrac{h}{\boxed{}}$
Then I use the Cross Products Property.	$\boxed{} \cdot h = 6 \cdot \boxed{}$
Then I simplify.	$3.5h = \boxed{}$
Now I divide each side by 3.5.	$\dfrac{3.5h}{\boxed{}} = \dfrac{\boxed{}}{\boxed{}}$
And now I simplify.	$h = \boxed{}$
Finally I write a sentence to answer the question.	The height of the flagpole is $\boxed{}$ ft.

Problem 3 · Interpreting Scale Drawings

Got It? On a map the scale is 1 in. : 110 mi. The distance from Jacksonville to Gainesville on the map is about 0.6 in. What is the actual distance from Jacksonville to Gainesville?

10. Let $x =$ _____.

11. Use the given information to write and solve a proportion.

12. The actual distance from Jacksonville to Gainesville is $\boxed{}$ miles.

Problem 4 · Using Scale Models

Got It? A scale model of a building is 6 in. tall. The scale of the model is 1 in. : 50 ft. How tall is the actual building?

13. Complete the equation in the model.

Relate   scale of model   equals $\dfrac{\text{model height}}{\text{actual height}}$

Define   Let $x =$ the actual height of the building.

Write $\dfrac{}{} = \dfrac{}{}$

14. Now write and solve a proportion.

15. The actual building is ⬜ ft tall.

Lesson Check • Do you UNDERSTAND?

Reasoning Suppose $\triangle ABC \sim \triangle TUV$. **Determine whether each pair of measures is equal.**

the measures of $\angle A$ and $\angle T$ the perimeters of the two triangles   the ratios of the sides $\dfrac{BC}{UV}$ and $\dfrac{AC}{TV}$

Underline the correct word to complete each sentence.

16. In similar triangles, corresponding sides always have the same   length / ratio .
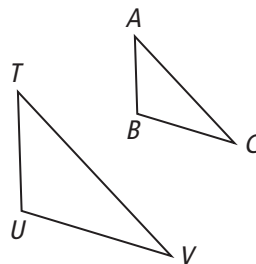
17. In similar triangles, corresponding angles always have   equal / unequal   measures.

Use the triangles at the right. Write T for *true* or F for *false*.

_____ **18.** The measures of $\angle A$ and $\angle T$ are equal.

_____ **19.** The perimeters of the two triangles are equal.

_____ **20.** The ratios $\dfrac{BC}{UV}$ and $\dfrac{AC}{TV}$ are equal.

Math Success

Check off the vocabulary words that you understand.

☐ similar figures   ☐ scale   ☐ scale drawing   ☐ scale model

Rate how well you can *use proportions to solve similar-figure problems*.

Need to review   0   2   4   6   8   10   Now I get it!

Lesson 2-8