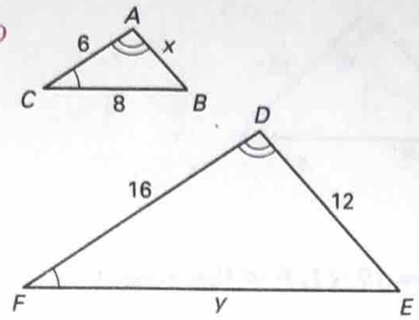
LESSON 6.4

Practice B

For use with pages 381–387

Use the diagram to complete the statement.

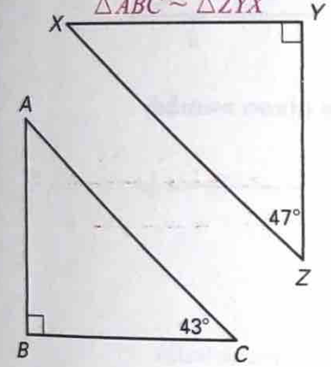


1. $\triangle ABC \sim$? $\triangle DEF$
2. $\frac{AB}{?} = \frac{?}{EF} = \frac{CA}{?}$ *DE, BC, FD*
3. $\angle B \cong$? $\angle E$
4. $\frac{?}{12} = \frac{8}{?}$ *x, y*
5. $x =$? $\frac{9}{2}$
6. $y =$? $\frac{64}{3}$

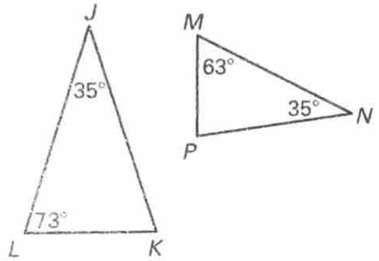
$4\frac{1}{2}$ units

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

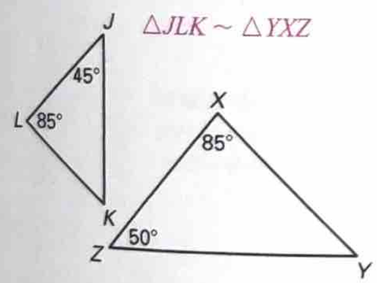
7. *$\triangle ABC \sim \triangle ZYX$*



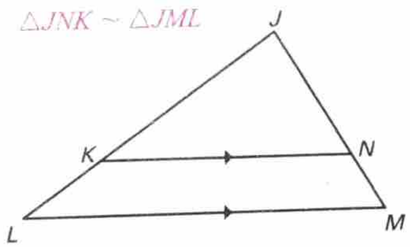
8. not similar



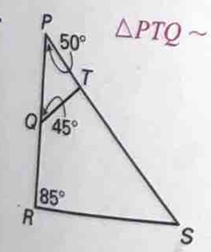
9. *$\triangle JLK \sim \triangle YXZ$*



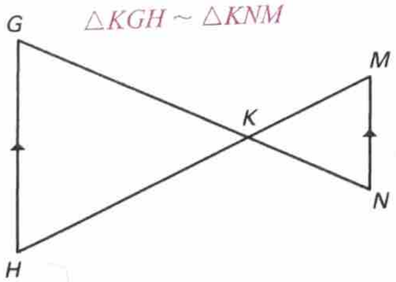
10. *$\triangle JNK \sim \triangle JML$*



11. *$\triangle PTQ \sim \triangle PRS$*



12. *$\triangle KGH \sim \triangle KNM$*

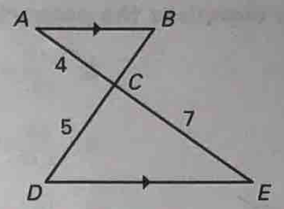


LESSON 6.4

Practice B *continued*

For use with pages 381–387

13. **Multiple Choice** In the diagram at the right, find the length of *BC*. D

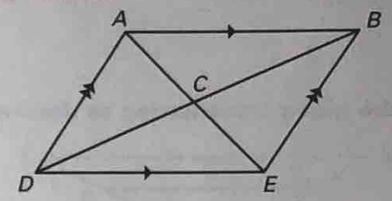


A. $\frac{28}{5}$ **B.** 6

C. 3 **D.** $\frac{20}{7}$

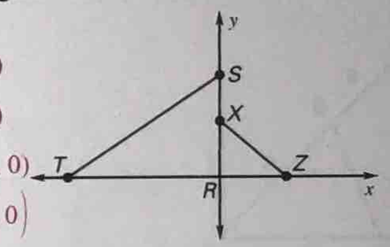
14. *Sample answer:* $\angle BAE \cong \angle DEA$, $\angle DCA \cong \angle BCE$, $\angle ADB \cong \angle EBD$

In Exercises 14–17, use the diagram at the right.



14. List three pairs of congruent angles. See above.
15. Name two pairs of similar triangles and write a similarity statement for each. *Sample answer:* $\triangle CAB \sim \triangle CED$, $\triangle ABD \sim \triangle EDB$
16. Is $\triangle ACD \sim \triangle BCE$? no
17. Is $\triangle AED \cong \triangle EAB$? yes

In Exercises 18–21, use the diagram at the right. Find the coordinates of point *Z* so that $\triangle RST \sim \triangle RXZ$.



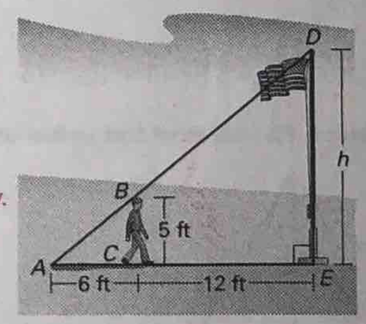
18. $R(0, 0)$, $S(0, 4)$, $T(-8, 0)$, $X(0, 2)$, $Z(x, y)$ $(4, 0)$
19. $R(0, 0)$, $S(0, 6)$, $T(-6, 0)$, $X(0, 2)$, $Z(x, y)$ $(2, 0)$
20. $R(0, 0)$, $S(0, 10)$, $T(-20, 0)$, $X(0, 6)$, $Z(x, y)$ $(12, 0)$
21. $R(0, 0)$, $S(0, 7)$, $T(-9, 0)$, $X(0, 4)$, $Z(x, y)$ $\left(\frac{36}{7}, 0\right)$

22. **Multiple Choice** Triangles *ABC* and *DEF* are right triangles that are similar. $\overline{AB}$ and $\overline{BC}$ are the legs of the first triangle. $\overline{DE}$ and $\overline{EF}$ are the legs of the second triangle. Which of the following is false? B

A. $\angle A \cong \angle D$ **B.** $AC = DF$ **C.** $\frac{AC}{DF} = \frac{AB}{DE}$

In Exercises 23–25, use the following information.

Flag Pole In order to estimate the height *h* of a flag pole, a 5 foot tall male student stands so that the tip of his shadow coincides with the tip of the flag pole's shadow. This scenario results in two similar triangles as shown in the diagram.



23. Why are the two overlapping triangles similar? See below.
24. Using the similar triangles, write a proportion that models the situation. $\frac{h}{5} = \frac{18}{6}$
25. What is the height *h* (in feet) of the flag pole? 15 ft

23. Both triangles are right triangles and have $\angle A$ in common. Because both triangles have two congruent angles, the triangles are similar.

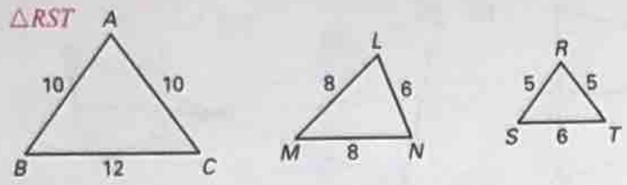
LESSON 6.5

Practice B

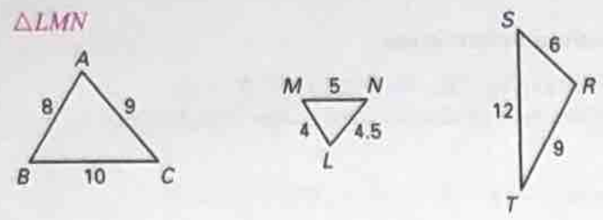
For use with pages 388–395

Is either △*LMN* or △*RST* similar to △*ABC*?

1. △*RST*

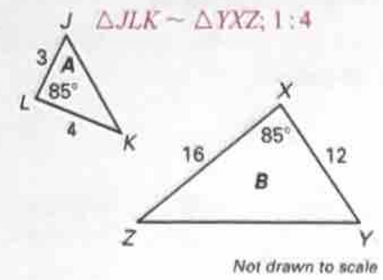


2. △*LMN*



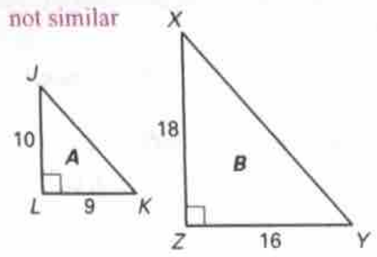
Determine whether the two triangles are similar. If they are similar, write a similarity statement and find the scale factor of △*A* to △*B*.

3. △*JLK* ~ △*YXZ*; 1 : 4



Not drawn to scale

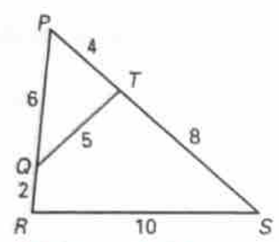
4. not similar



5. Algebra Find the value of m that makes △*ABC* ~ △*DEF* when $AB = 3$, $BC = 4$, $DE = 2m$, $EF = m + 5$, and $\angle B \cong \angle E$. 3

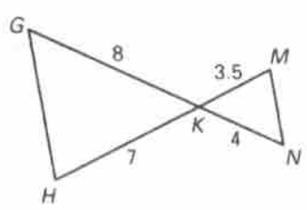
Show that the triangles are similar and write a similarity statement. *Explain* your reasoning.

6.



△*PQT* ~ △*PSR*; SSS Similarity Theorem

7.



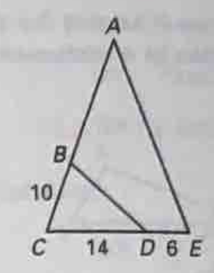
△*KNM* ~ △*KGH*; SAS Similarity Theorem

LESSON 6.5

Practice B *continued*

For use with pages 388–395

8. Multiple Choice In the diagram at the right, △*ACE* ~ △*DCB*. Find the length of *AB*. B

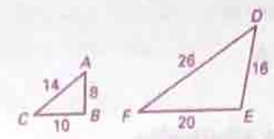


A. 12 **B.** 18

C. $\frac{35}{2}$ **D.** $\frac{30}{7}$

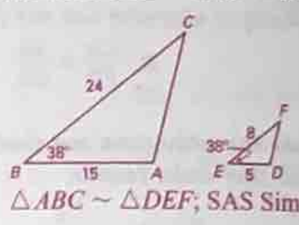
Sketch the triangles using the given description. *Explain* whether the two triangles can be similar.

9. The side lengths of △*ABC* are 8, 10 and 14. The side lengths of △*DEF* are 16, 20 and 26.



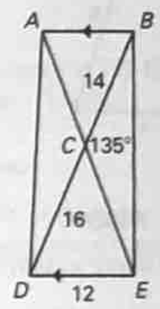
△*ABC* cannot be similar to △*DEF* because not all corresponding sides are proportional.

10. In △*ABC*, $AB = 15$, $BC = 24$ and $m\angle B = 38°$. In △*DEF*, $DE = 5$, $EF = 8$ and $m\angle E = 38°$.



△*ABC* ~ △*DEF*; SAS Similarity Theorem

In Exercises 11–14, use the diagram at the right to copy and complete the statement.



11. △*ABC* ~ ? △*EDC*

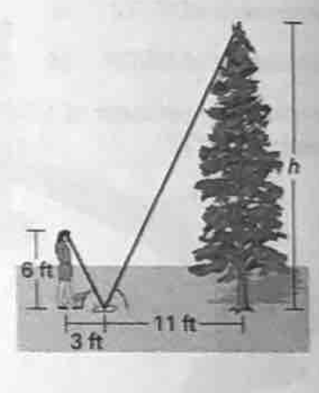
12. $m\angle DCE$ = ? 45°

13. AB = ? 10.5

14. $m\angle CAB + m\angle ABC$ = ? 135°

In Exercises 15 and 16, use the following information.

Pine Tree In order to estimate the height h of a tall pine tree, a student places a mirror on the ground and stands where she can see the top of the tree, as shown. The student is 6 feet tall and stands 3 feet from the mirror which is 11 feet from the base of the tree.



15. What is the height h (in feet) of the pine tree? 22 ft

16. Another student also wants to see the top of the tree. The other student is 5.5 feet tall. If the mirror is to remain 3 feet from the student's feet, how far from the base of the tree should the mirror be placed? 12 ft

LESSON 6.6

Practice B

For use with pages 396–403

Use the figure to complete the proportions.

1. $\frac{GC}{CF} = \frac{?}{DB}$ *GD*

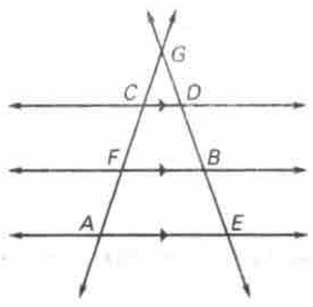
2. $\frac{AF}{FC} = \frac{?}{BD}$ *EB*

3. $\frac{CD}{FB} = \frac{GD}{?}$ *GB*

4. $\frac{AE}{CD} = \frac{GE}{?}$ *GD*

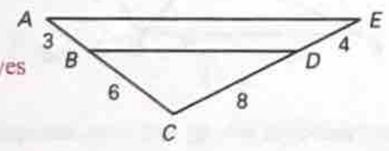
5. $\frac{FG}{AG} = \frac{FB}{?}$ *AE*

6. $\frac{GD}{GE} = \frac{?}{AE}$ *CD*

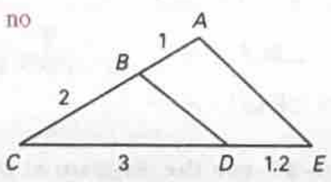


Use the given information to determine whether $\overline{BD} \parallel \overline{AE}$.

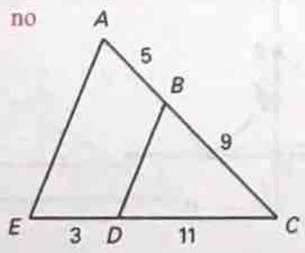
7. yes



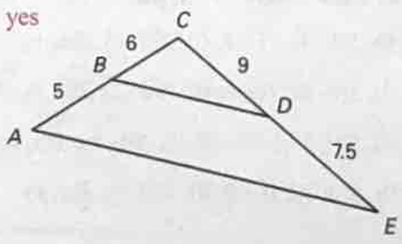
8. no



9. no



10. yes



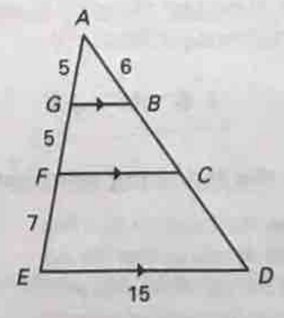
Determine the length of each segment.

11. $\overline{BC}$ 6

12. $\overline{FC}$ $8\frac{14}{17}$

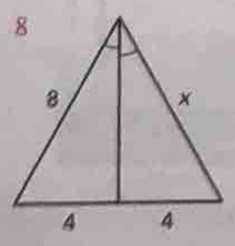
13. $\overline{GB}$ $4\frac{7}{17}$ 75/17 4.41

14. $\overline{CD}$ $8\frac{2}{5}$

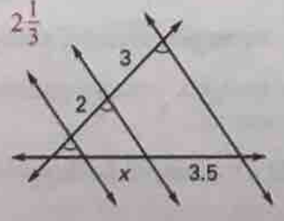


In Exercises 15–18, find the value of *x*.

15. 8



16. $2\frac{1}{3}$

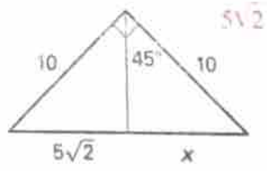


LESSON 6.6

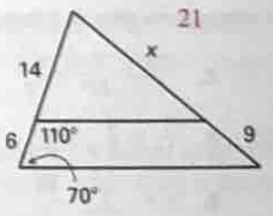
Practice B *continued*

For use with pages 396–403

17. $5\sqrt{2}$



18. 21

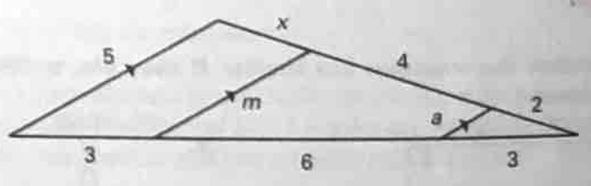


In Exercises 19–21, find the value of the variable.

19. x 2

20. m $3\frac{3}{4}$

21. a $1\frac{1}{4}$



Use construction tools to divide the line segment into the given number of equal parts. **22–24.** Check student's work.

22. 4

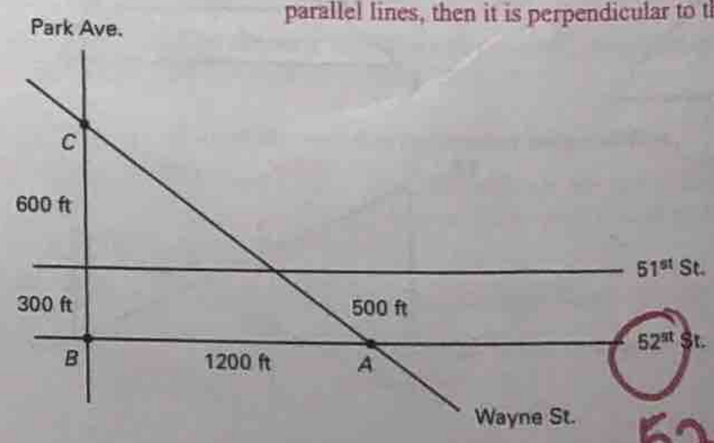
23. 3

24. 2

25. Maps On the map below, 51st Street and 52nd Street are parallel. Charlie walks from point *A* to point *B* and then from point *B* to point *C*. You walk directly from point *A* to point *C*.

a. How many more feet did Charlie walk than you? 600 ft

b. Park Avenue is perpendicular to 51st Street. Is Park Avenue perpendicular to 52nd Street? *Explain.* yes; If a transversal is perpendicular to one of two parallel lines, then it is perpendicular to the other.



52nd

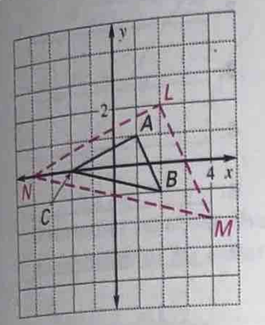
LESSON 6.7

Practice B

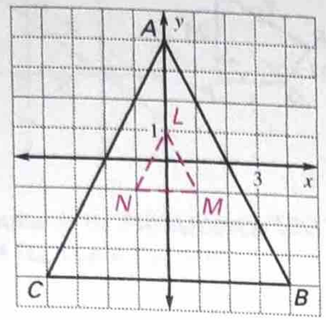
For use with pages 408–415

Draw a dilation of the figure using the given scale factor.

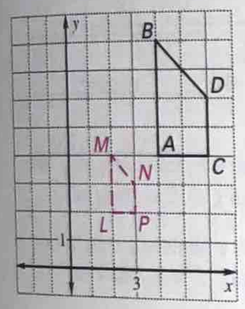
1. $k = 2$



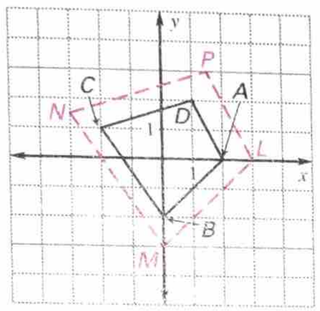
2. $k = \frac{1}{4}$



3. $k = \frac{1}{2}$

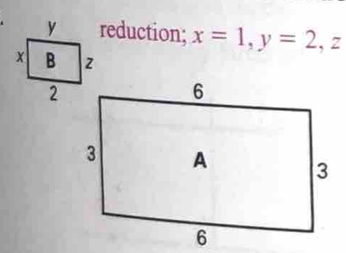


4. $k = 1\frac{1}{2}$

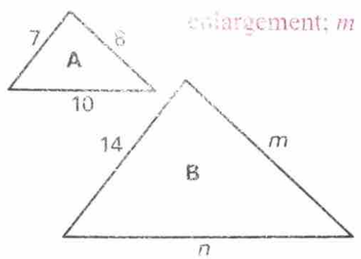


Determine whether the dilation from Figure A to Figure B is a *reduction* or an *enlargement*. Then, find the values of the variables.

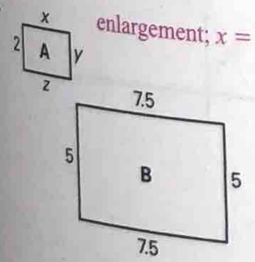
5. reduction; $x = 1, y = 2, z = 1$



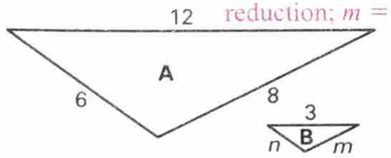
6. enlargement; $m = 16, n = 20$



7. enlargement; $x = 3, y = 2, z = 3$



8. reduction; $m = 2, n = 1.5$



LESSON 6.7

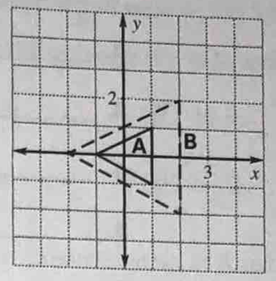
LESSON 6.7

Practice B *continued*

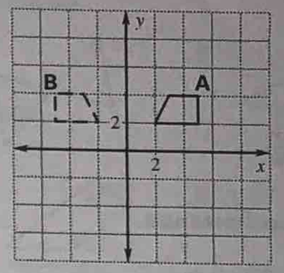
For use with pages 408–415

Determine whether the transformation from Figure A to Figure B is a *translation, reflection, rotation,* or *dilation*.

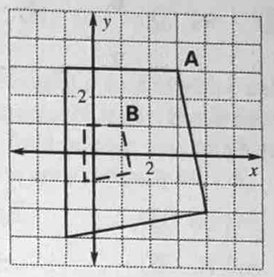
9. dilation



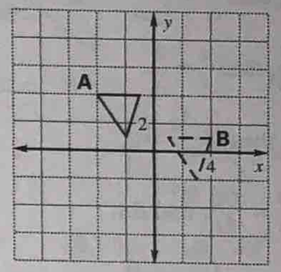
10. reflection



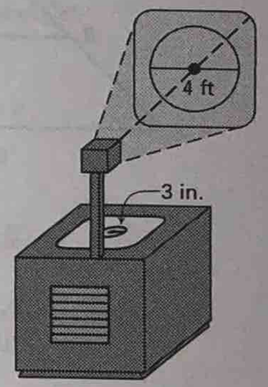
11. dilation



12. translation



13. **Overhead Projectors** Your teacher draws a circle on an overhead projector. The projector then displays an enlargement of the circle on the wall. The circle drawn has a radius of 3 inches. The circle on the wall has a diameter of 4 feet. What is the scale factor of the enlargement? 8

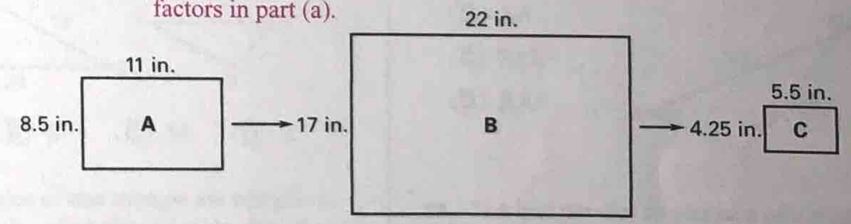


14. **Posters** A poster is enlarged and then the enlargement is reduced as shown in the figure.

   a. What is the scale factor of the enlargement? the reduction? 2; $\frac{1}{4}$

   b. A second poster is reduced directly from size A to size C. What is the scale factor of the reduction? $\frac{1}{2}$

   c. How are the scale factors in part (a) related to the scale factor in part (b)? The scale factor in part (b) is the product of the scale factors in part (a).



LESSON 6.7