Name ____________________________ Date ______________

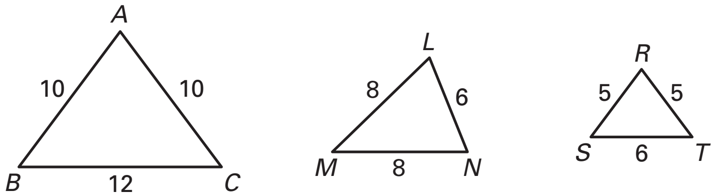
LESSON 6.4

Practice B

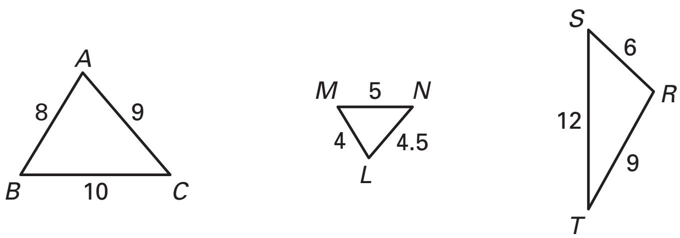
For use with the lesson "Prove Triangles Similar by SSS and SAS"

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

1.

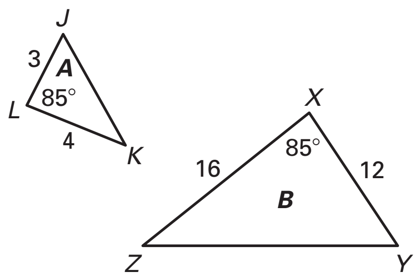


2.



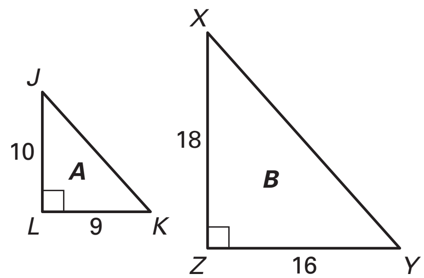
Determine whether the two triangles are similar. If they are similar, write a similarity statement and find the scale factor of △*A* to △*B*.

3.



Not drawn to scale

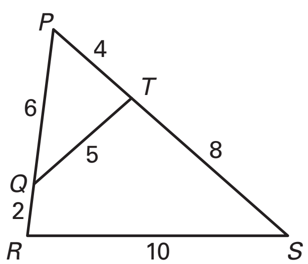
4.



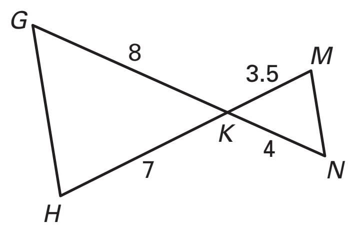
5. **Algebra** Find the value of m that makes $\triangle ABC \sim \triangle DEF$ when $AB = 3$, $BC = 4$, $DE = 2m$, $EF = m + 5$, and $\angle B \cong \angle E$.

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

6.



7.



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Name ____________________ Date ____________

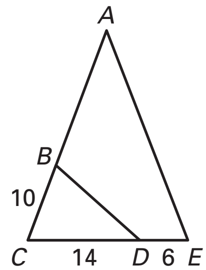
Practice B *continued*

For use with the lesson "Prove Triangles Similar by SSS and SAS"

8. Multiple Choice In the diagram at the right, $\triangle ACE \sim \triangle DCB$. Find the length of $\overline{AB}$.

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 $\triangle ABC$ are 8, 10 and 14.

The side lengths of $\triangle DEF$ are 16, 20 and 26.

10. In $\triangle ABC$, $AB = 15$, $BC = 24$ and $m\angle B = 38°$.

In $\triangle DEF$, $DE = 5$, $EF = 8$ and $m\angle E = 38°$.

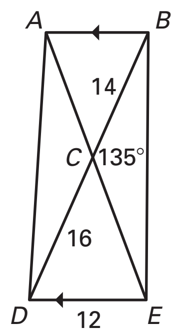
In Exercises 11–14, use the diagram at the right to copy and complete the statement.

11. $\triangle ABC \sim$ __?__

12. $m\angle DCE =$ __?__

13. $AB =$ __?__

14. $m\angle CAB + m\angle ABC =$ __?__

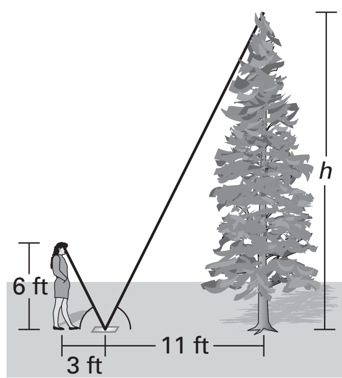


In Exercises 15 and 16, use the following information.

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?

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?



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Lesson 6.4 Prove Triangles Similar by SSS and SAS, continued

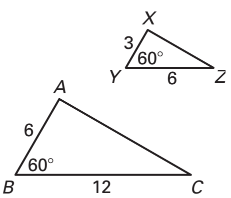
5. $\frac{RS}{XY} = \frac{4}{6} = \frac{2}{3}, \frac{ST}{YZ} = \frac{6}{9} = \frac{2}{3}$, so two pairs of sides are proportional. Because the included angles $\angle S$ and $\angle Y$ are right angles, they are congruent. Therefore, $\triangle RST \sim \triangle XYZ$ by SAS Similarity Thm.; scale factor: $\frac{2}{3}$

6. $\frac{RT}{XZ} = \frac{28}{16} = \frac{7}{4}, \frac{ST}{YZ} = \frac{21}{12} = \frac{7}{4}$, so two pairs of sides are proportional, and their included angles are congruent ($\angle T \cong \angle Z$). Therefore, $\triangle RST \sim \triangle XYZ$ by SAS Similarity Thm.; scale factor: $\frac{7}{4}$ **7.** $\triangle JKL \sim \triangle TUV$; $\frac{9}{5}$ **8.** no

9. yes; $\triangle CDG \sim \triangle CEF$; $\frac{5}{9}$ **10.** no

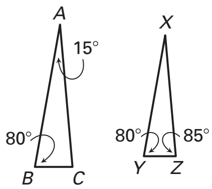
11. yes; SSS Similarity Thm. **12.** yes; SAS Similarity Thm. **13.** no **14.** yes; SSS Similarity Thm. **15.** yes; AA Similarity Post.

16.



SAS Similarity Thm

17.



AA Similarity Post.

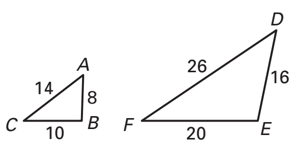
18. a. AA Similarity Post. **b.** *Sample answer:* Use the similar triangles to set up the proportion $\frac{\ell}{10} = \frac{28}{8}$; 35 ft

Practice Level B

1. $\triangle RST$ **2.** $\triangle LMN$ **3.** $\triangle JLK \sim \triangle YXZ$; 1 : 4

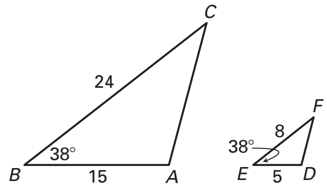
4. not similar **5.** 3 **6.** $\triangle PQT \sim \triangle PSR$; SSS Similarity Theorem **7.** $\triangle KNM \sim \triangle KGH$; SAS Similarity Theorem **8.** B

9.



$\triangle ABC$ cannot be similar to $\triangle DEF$ because not all corresponding sides are proportional.

10.



$\triangle ABC \sim \triangle DEF$; SAS Similarity Theorem

11. $\triangle EDC$ **12.** 45° **13.** 10.5

14. 135° **15.** 22 ft **16.** 12 ft

Practice Level C

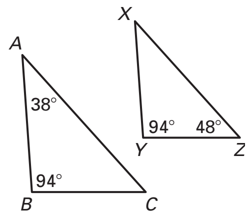
1. yes; $\triangle ABC \sim \triangle DEC$ by AA **2.** no **3.** yes; $\triangle LMN \sim \triangle DMP$ by SAS

4. Mark DF as 30 to use SSS.

5. Mark $m\angle J$ as 79° to use SAS.

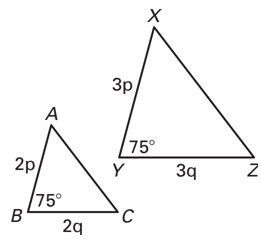
6. Mark UV as $44\frac{4}{9}$ to use SAS.

7.



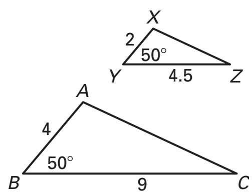
AA Similarity Post.

8.



SAS Similarity Thm.

9.



SAS Similarity Thm.

10. 45° **11.** 85° **12.** 10 **13.** $10\sqrt{2}$

14. $10 + \sqrt{69}$ **15.** $\triangle ABD \sim \triangle GFD$, $\triangle CBD \sim \triangle EFD$, $\triangle ACD \sim \triangle GED$

16. $x = 10, y = 5$ **17.** $x = 76, y = 5$

18. $x = 8, y = 4, z = 2\frac{1}{3}$

19. *Sample answer:* You are given that $\triangle ABC$ is equilateral, so $AB = BC = AC$ by the definition of an equilateral $\triangle$. It is given that $\overline{DE}$, $\overline{DF}$, and $\overline{EF}$ are midsegments, so $DE = \frac{1}{2}BC$, $EF = \frac{1}{2}AC$, and $DF = \frac{1}{2}AB$ by the midsegment Thm. Then $DE = \frac{1}{2}BC$, $EF = \frac{1}{2}BC$, and $DF = \frac{1}{2}BC$ by the Substitution Property of

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