

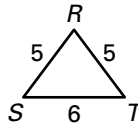
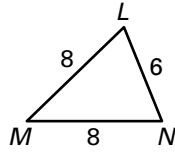
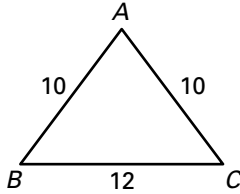
LESSON 6.5

Practice B

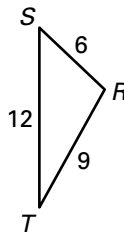
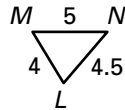
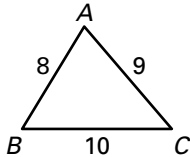
For use with pages 406–413

Is either $\triangle LMN$ or $\triangle RST$ similar to $\triangle ABC$?

1.

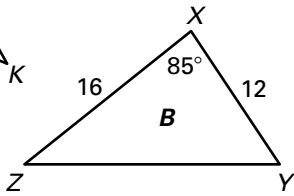
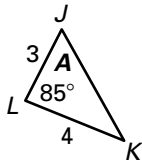


2.



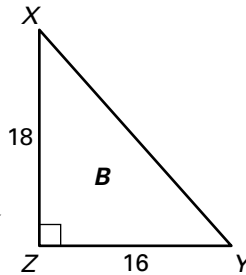
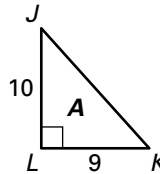
Determine whether the two triangles are similar. If they are similar, write a similarity statement and find the scale factor of $\triangle A$ to $\triangle B$.

3.



Not drawn to scale

4.

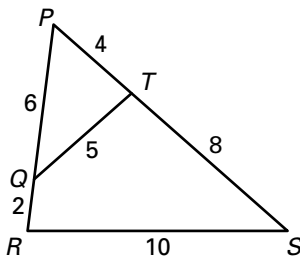


5. **Algebra** Find the value of m that makes $\triangle ABC \sim \triangle DEF$ when $AB = 3$, $BC = 4$, $DE = 2m$, $EF = m + 5$, and $\angle B \cong \angle E$.

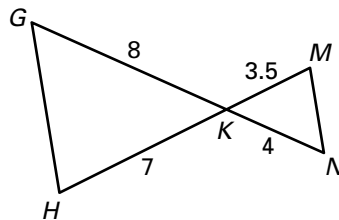
Show that the triangles are similar and write a similarity statement.

Explain your reasoning.

6.



7.

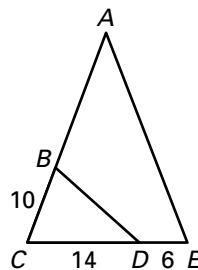


LESSON 6.5

Practice B *continued*
For use with pages 406–413

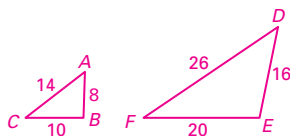
8. Multiple Choice In the diagram at the right, $\triangle ACE \sim \triangle DCB$. Find the length of \overline{AB} .

- A. 12
- B. 18
- C. $\frac{35}{2}$
- D. $\frac{30}{7}$

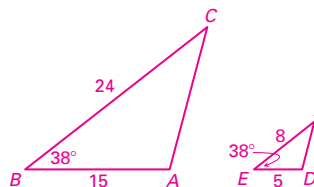


Sketch the triangles using the given description. Explain whether the two triangles can be similar.

9. The side lengths of $\triangle ABC$ are 8, 10 and 14. The side lengths of $\triangle DEF$ are 16, 20 and 26.

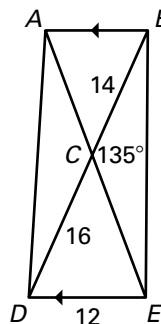


10. In $\triangle ABC$, $AB = 15$, $BC = 24$ and $m\angle B = 38^\circ$. In $\triangle DEF$, $DE = 5$, $EF = 8$ and $m\angle E = 38^\circ$.



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

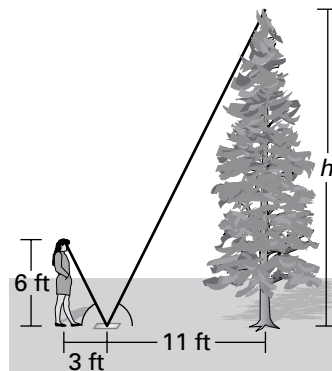
- 11. $\triangle ABC \sim$?
- 12. $m\angle DCE =$?
- 13. $AB =$?
- 14. $m\angle CAB + m\angle ABC =$?



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?



Lesson 6.4, continued

Statements	Reasons
3. $\overline{WY} \cong \overline{WY}$	3. Reflexive Prop. of Cong.
4. $\triangle YZW \cong \triangle WXY$	4. ASA
5. $\angle VZU \cong \angle YZW$	5. Vert. Angles Cong. Theorem
6. $\angle UVZ \cong \angle WYZ$	6. Alt. Int. Angles Theorem
7. $\triangle VZU \sim \triangle YZW$	7. AA Sim. Post.
8. $\triangle VZU \sim \triangle WXY$	8. Transitive Property

Lesson 6.5

Practice Level A

1. $\frac{AB}{DE} = \frac{12}{8} = \frac{3}{2}$, $\frac{AC}{DF} = \frac{9}{6} = \frac{3}{2}$, $\frac{BC}{EF} = \frac{15}{10} = \frac{3}{2}$,

so $\triangle ABC \sim \triangle DEF$ by SSS Similarity Thm.;

Scale factor: $\frac{3}{2}$

2. $\frac{AB}{DE} = \frac{21}{28} = \frac{3}{4}$, $\frac{AC}{DF} = \frac{18}{24} = \frac{3}{4}$, $\frac{BC}{EF} = \frac{33}{44} = \frac{3}{4}$,

so $\triangle ABC \sim \triangle DEF$ by SSS Similarity Thm.;

Scale factor: $\frac{3}{4}$ 3. $\triangle DEF \sim \triangle GHI$; $\frac{2}{1}$

4. $\triangle ABC \sim \triangle GHJ$; $\frac{4}{5}$

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

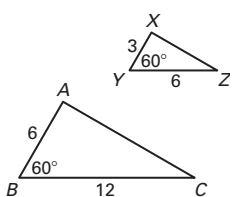
sides are proportional, and their included angles are congruent ($\angle T \cong \angle Z$). Therefore, $\triangle RST \sim \triangle XYZ$ by SAS Similarity Thm.;

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

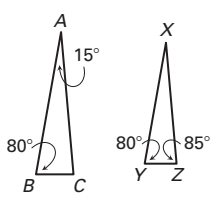
11. yes; SSS Similarity Thm. 12. yes; SAS Similarity Thm. 13. no 14. yes; SSS Similarity Thm. 15. yes; AA Similarity Post.

16.



SAS Similarity Thm

17.

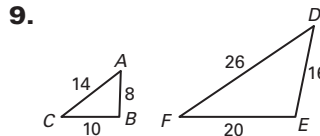


AA Similarity Post.

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

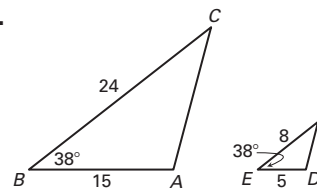
Practice Level B

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



$\triangle ABC$ 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

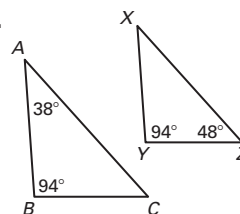
3. yes; $\triangle LMN \sim \triangle DMP$ by SAS

4. Mark DF as 30 to use SSS.

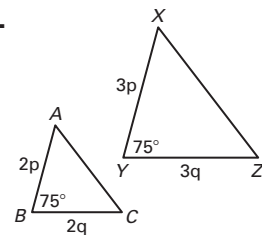
5. Mark $m\angle J$ as 79° to use SAS.

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

7.

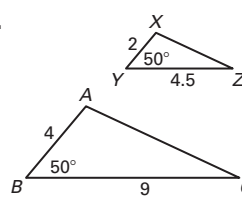


8.



AA Similarity Post. SAS Similarity Thm.

9.



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