

**LESSON 6.3**

**Practice**

For use with the lesson "Prove Triangles Similar by AA"

Use the diagram to complete the statement.

1.  $\triangle ABC \sim \triangle ADEF$

2.  $\frac{AB}{DE} = \frac{BC}{EF} = \frac{CA}{FD}$

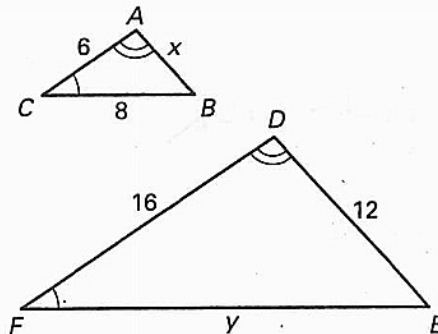
3.  $\angle B \cong \angle E$

4.  $\frac{x}{12} = \frac{8}{y}$

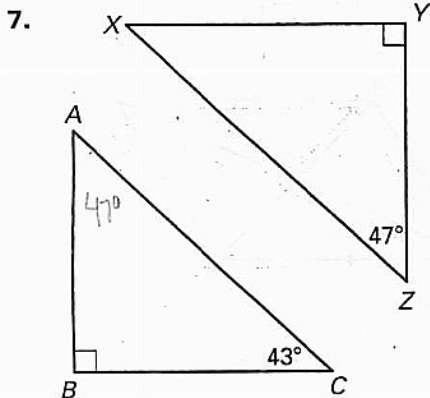
5.  $x = 4.5$

6.  $y = 21\frac{1}{3}$

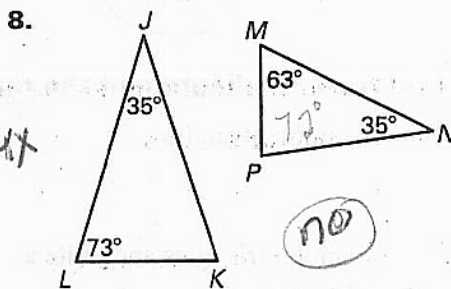
$\frac{6}{16} = \frac{x}{12}$      $72 = 16x$      $\frac{6}{16} = \frac{8}{y}$      $6y = 128$



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

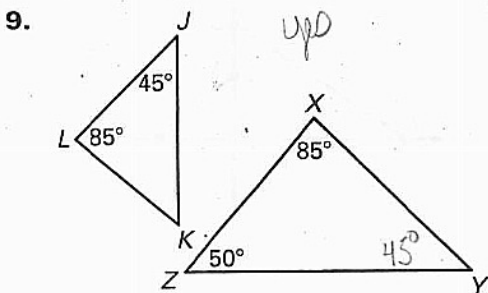


UPD  
AA  
 $\triangle ABC \sim \triangle ZYX$

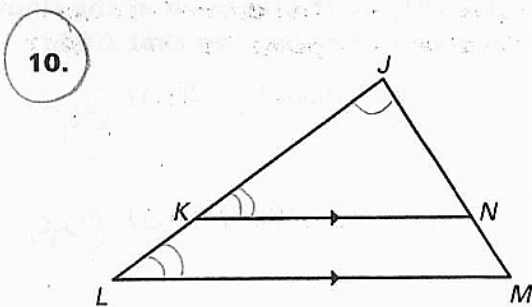


no

180  
108  
- 72



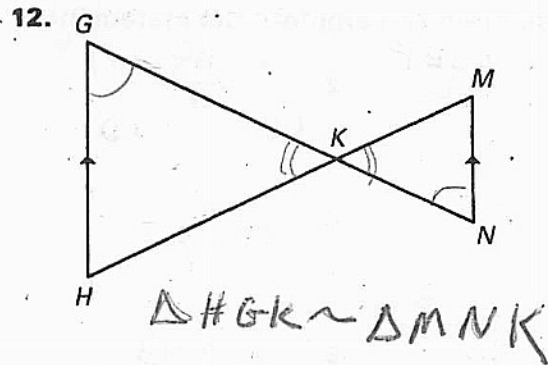
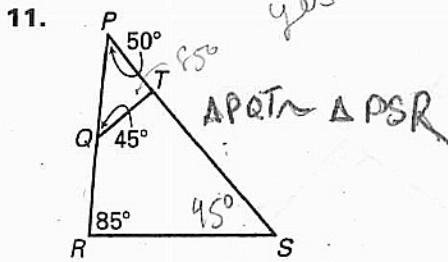
$\triangle LJK \sim \triangle XYZ$



$\triangle JKN \sim \triangle JLM$

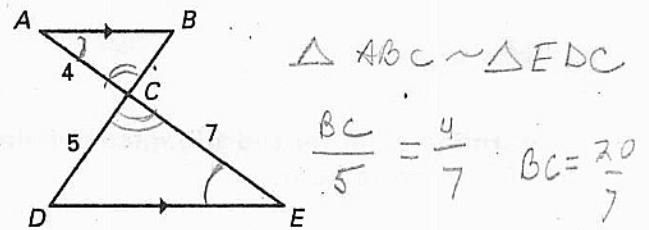
**LESSON 6.3**

**Practice** *continued*  
For use with the lesson "Prove Triangles Similar by AA"



13. **Multiple Choice** In the diagram at the right, find the length of  $\overline{BC}$ .

- A.  $\frac{28}{5}$
- B. 6
- C. 3
- D.  $\frac{20}{7}$



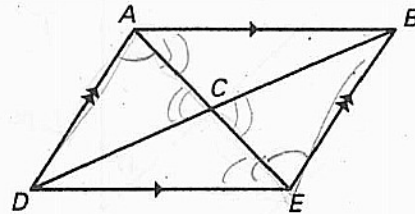
In Exercises 14–17, use the diagram at the right.

14. List three pairs of congruent angles.

$\angle ACD \cong \angle BCE$   $\angle DAC \cong \angle BEA$   
 $\angle BAC \cong \angle DEC$

15. Name two pairs of similar triangles and write a similarity statement for each.

$\Delta ACD \sim \Delta ECB$   $\Delta ACB \sim \Delta ECD$



16. Is  $\Delta ACD \sim \Delta BCE$ ? order wrong - no

17. Is  $\Delta AED \cong \Delta EAB$ ? yes

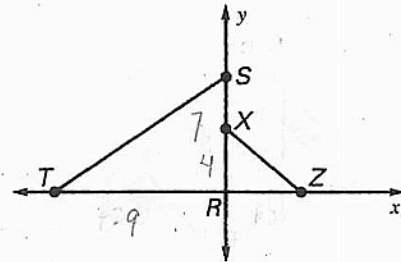
In Exercises 18–21, use the diagram at the right.  
Find the coordinates of point Z so that  $\Delta RST \sim \Delta RXZ$ .

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.  $R(0, 0), S(0, 7), T(-9, 0), X(0, 4), Z(x, y)$   $(\frac{36}{7}, 0)$



$\frac{7}{9} = \frac{4}{x}$   
 $7x = 36$   
 $x = \frac{36}{7}$

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**Practice** *continued*  
For use with the lesson "Prove Triangles Similar by AA"

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

A.  $\angle A \cong \angle D$

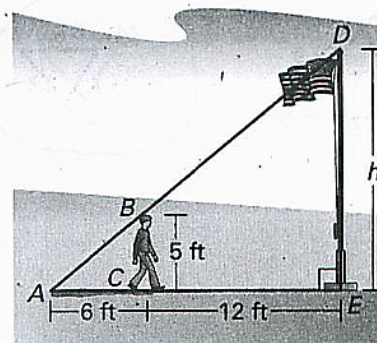
B.  $AC = DF$

C.  $\frac{AC}{DF} \cong \frac{AB}{DE}$



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?

AA  $\angle A \cong \angle A$

$m\angle BAC = 90^\circ$   $m\angle DAE = 90^\circ$

**24.** Using the similar triangles, write a proportion that models the situation.

$\frac{5}{6} = \frac{h}{18}$

**25.** What is the height  $h$  (in feet) of the flag pole?

$5 \cdot 18 = 6h$

$h = \frac{5 \cdot 18}{6}$   $h = 15 \text{ ft.}$

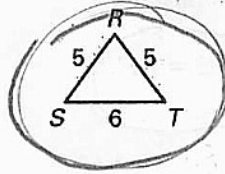
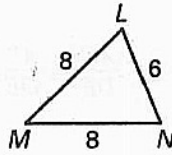
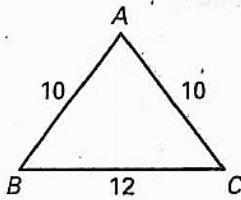
**LESSON**  
**6.4**

**Practice**

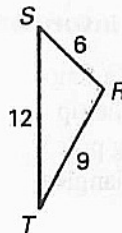
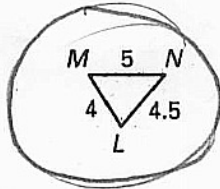
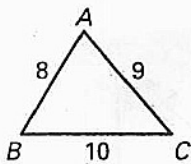
For use with the lesson "Prove Triangles Similar by SSS and SAS"

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

1.

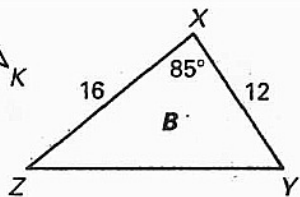
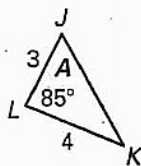


2.



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.

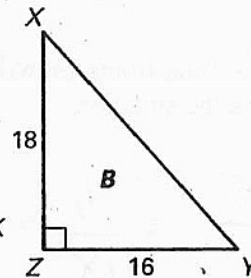
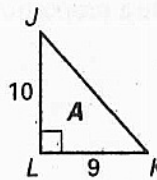


Not drawn to scale

$$\frac{3}{12} = \frac{4}{16}$$

~~40~~ SAS  
 $\triangle JKL \sim \triangle XYZ$

4.



$$\frac{10}{18} \neq \frac{9}{16} \quad \text{no}$$

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  $\angle B \cong \angle E$ .

$$\frac{AB}{DE} = \frac{BC}{EF}$$

$$\frac{3}{2m} = \frac{4}{m+5}$$

$$3m + 15 = 8m$$

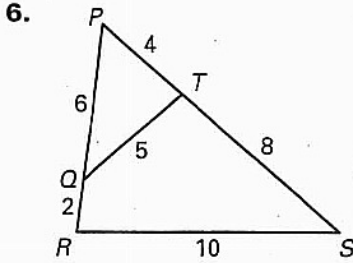
$$15 = 5m$$

$$\boxed{3 = m}$$

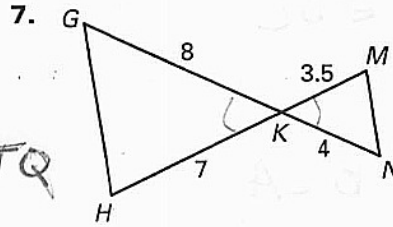
**LESSON 6.4**

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

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

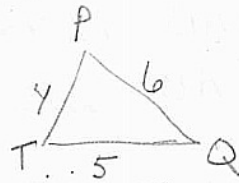
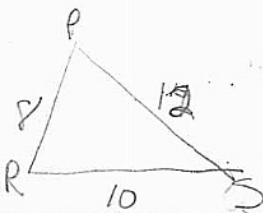


$\triangle PRS \sim \triangle PTQ$



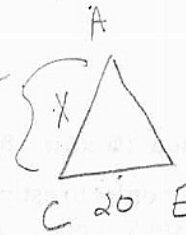
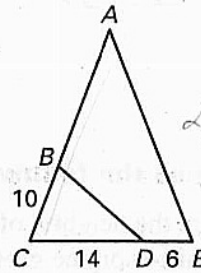
$\frac{8}{4} = \frac{7}{3.5}$

$\triangle GKH \sim \triangle MNK$



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

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

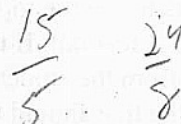
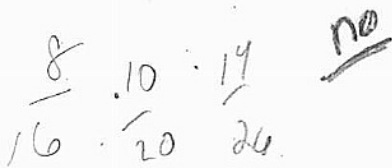


$28 - 10$

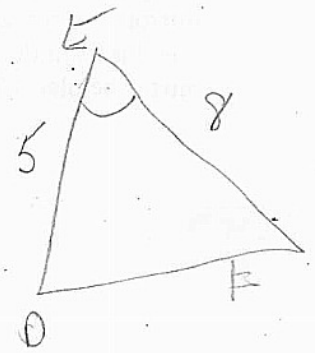
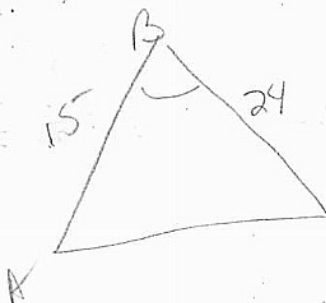
Sketch the triangles using the given description. Explain whether the two triangles can be similar.

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  $m\angle E = 38^\circ$ .



yes SAS

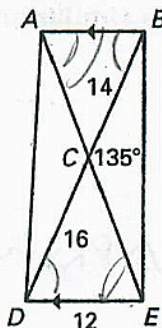


**LESSON**  
**6.4**

**Practice** *continued*

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

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



11.  $\triangle ABC \sim \underline{A} EDC$

12.  $m\angle DCE = \underline{M} B CA$

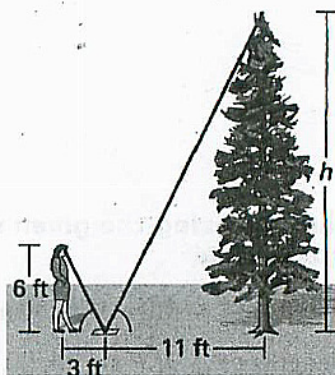
13.  $AB = \underline{10.5} ? \rightarrow \frac{AB}{12} = \frac{14}{16}$

$16 AB = 14 \cdot 12$   
 $AB = 10.5$

14.  $m\angle CAB + m\angle ABC = \underline{?} 135^\circ$

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?

$\frac{6}{h} = \frac{3}{11}$

or  $\frac{6}{3} = \frac{h}{11}$

$h = 22$

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?

$\frac{5.5}{3} = \frac{22}{x}$   $x = 12$