

SM2H 7.5 Similarity

Fill in the blanks.

- Two polygons are similar if corresponding angles are _____ and corresponding side lengths are _____.
- If two polygons are similar, then the ratio of their corresponding sides is called the _____.

Use the diagram below to complete the following statements.

3. $\triangle CAB \sim$ _____

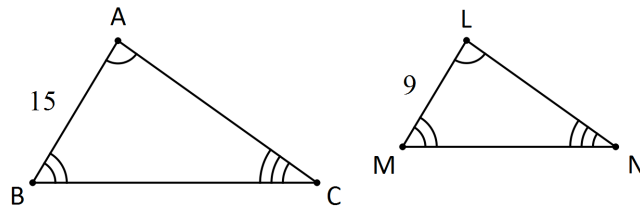
4. $\angle A \cong$ _____

5. $\angle N \cong$ _____

6. $\angle B \cong$ _____

7. $\frac{\quad}{LM} = \frac{BC}{\quad} = \frac{\quad}{NL}$

8. The scale factor is _____.



Solve each equation.

9. $\frac{5}{8} = \frac{x}{24}$

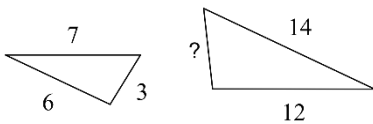
10. $\frac{3}{5} = \frac{9}{y}$

11. $\frac{5}{3} = \frac{10}{z+2}$

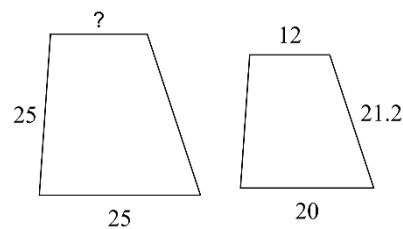
12. $\frac{3}{w} = \frac{w}{12}$

The polygons in each pair are similar. Find the missing side length. Show your work!

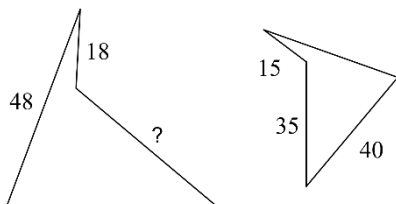
13.



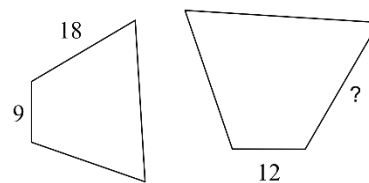
14.



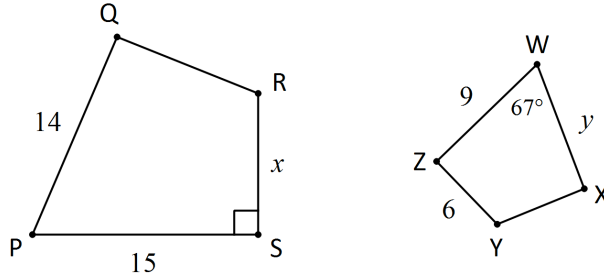
15.



16.



In the diagram below, $PQRS \sim WXYZ$. Answer the following questions.



17. Complete the statement of proportionality: $\frac{\underline{\hspace{1cm}}}{WX} = \frac{QR}{\underline{\hspace{1cm}}} = \frac{RS}{\underline{\hspace{1cm}}} = \frac{\underline{\hspace{1cm}}}{ZW}$

18. What is $m\angle P$?

19. What is $m\angle Z$?

20. What is the scale factor?

21. Find the value of x .

22. Find the value of y .

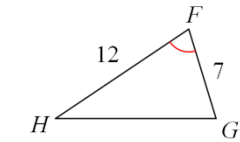
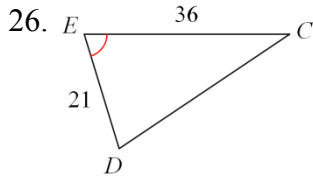
For each problem, draw and label a picture of the situation, write an equation, then solve the problem. Show your work!

23. A company produces a standard-size U.S. flag that is 3 feet wide and 5 feet long. The company also produces a giant-size flag that is similar to the standard-size flag. If the shorter side of the giant-size flag is 36 feet, what is the length of its longer side?

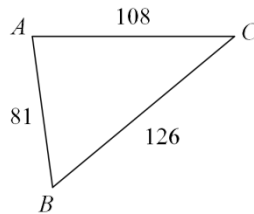
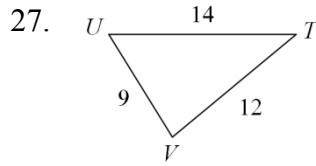
24. You want to make a scale model of the Empire State Building using the scale 1 inch = 250 feet. The Empire State Building is 1250 feet tall. How tall will your model be?

25. A 5-ft tall person casts a shadow that is 12-ft long. A nearby tree casts a shadow that is 30-ft long. How tall is the tree?

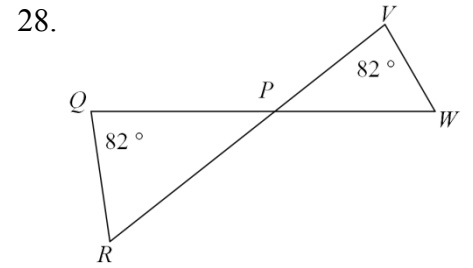
Determine whether the triangles are similar – mark any congruent angles and show whether the ratios of corresponding sides are the same. If the triangles are similar, state how you know they are similar (AA, SAS, or SSS), and complete the similarity statement.



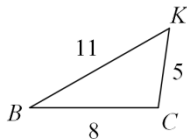
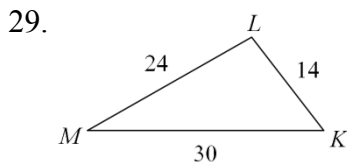
$\triangle EDC \sim$ _____



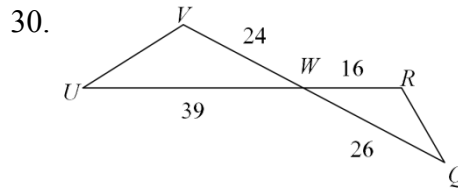
$\triangle ABC \sim$ _____



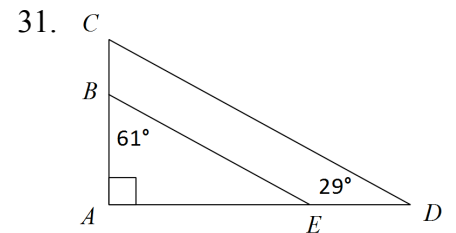
$\triangle PQR \sim$ _____



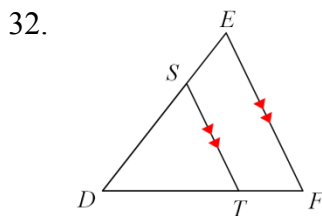
$\triangle KLM \sim$ _____



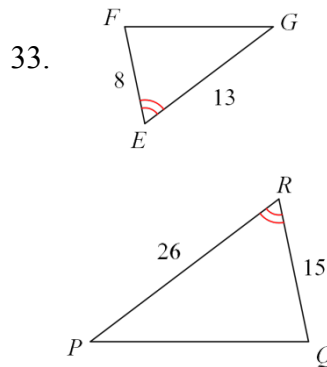
$\triangle WWU \sim$ _____



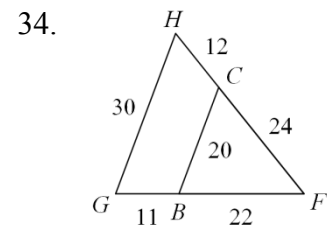
$\triangle ABE \sim$ _____



$\triangle DEF \sim$ _____



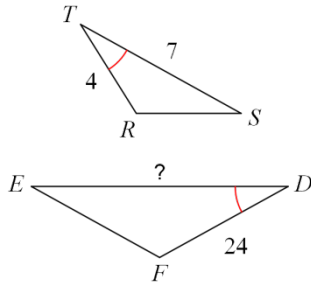
$\triangle RQP \sim$ _____



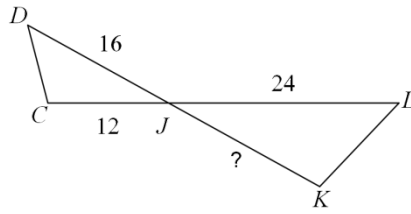
$\triangle FGH \sim$ _____

Find each missing length.

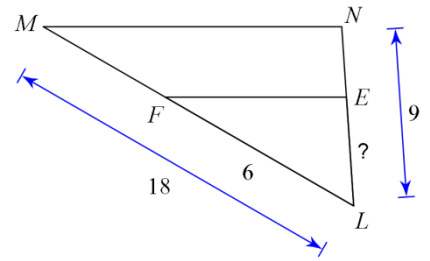
35. $\triangle RST \sim \triangle FED$



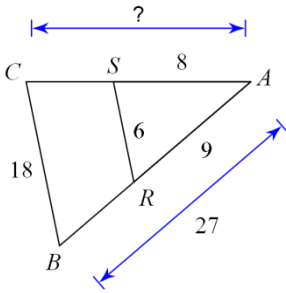
36. $\triangle JCD \sim \triangle JKL$



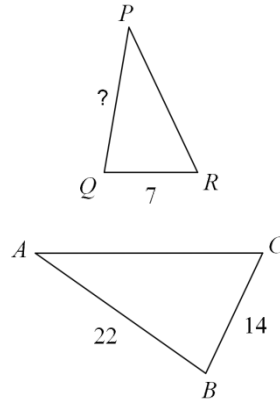
37. $\triangle LEF \sim \triangle LNM$



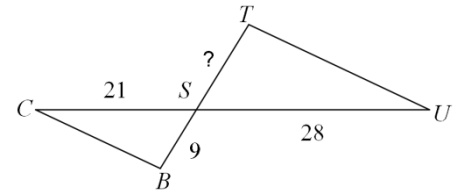
38. $\triangle RAS \sim \triangle BAC$



39. $\triangle PQR \sim \triangle ABC$



40. $\triangle SBC \sim \triangle STU$



Use the diagram at the right to complete each statement.

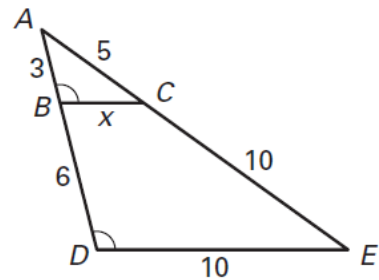
41. $\triangle CAB \sim$ _____

42. $\frac{AE}{AC} = \frac{?}{AB}$

43. $\frac{3}{9} = \frac{x}{?}$

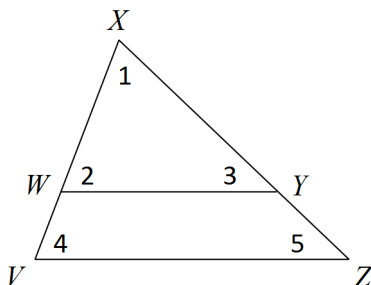
44. $x =$ _____

45. The scale factor of $\triangle ABC$ to $\triangle ADE$ is _____



46. Arrange the statements and reasons to complete the following proof.

Given: $\overline{WY} \parallel \overline{VZ}$
Prove: $\Delta WXY \sim \Delta VXZ$



Statements and Reasons
Reflexive Property of Congruence $\Delta WXY \sim \Delta VXZ$
Given
Corresponding Angle Postulate $\angle 1 \cong \angle 1$
AA Similarity Postulate $\overline{WY} \parallel \overline{VZ}$ $\angle 2 \cong \angle 4$

Statements	Reasons
1.	1.
2.	2.
3.	3.
4.	4.