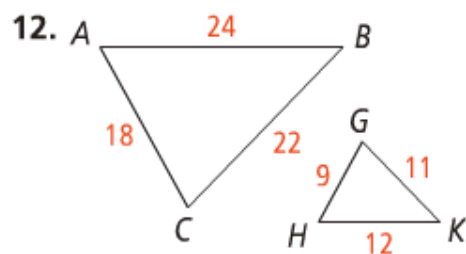
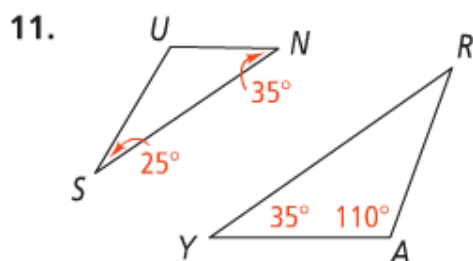
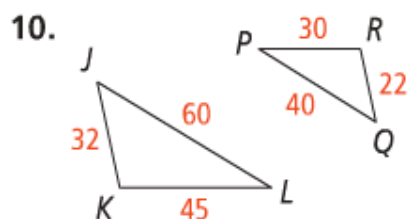
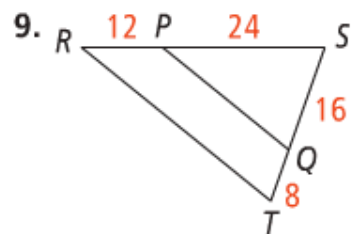
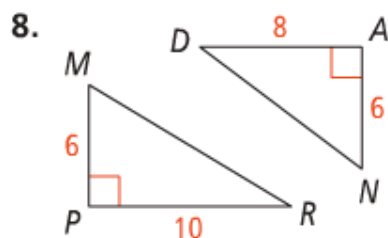
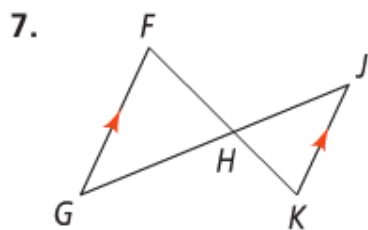
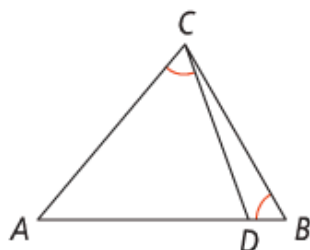


Determine whether the triangles are similar. If so, write a similarity statement and name the postulate or theorem you used. If not, explain.

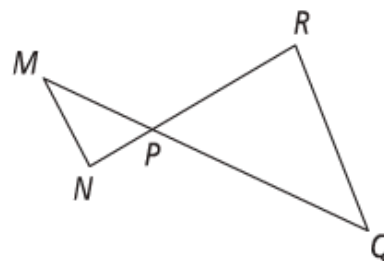
← See Problems 1 and 2.



13. **Given:** $\angle ABC \cong \angle ACD$
Proof **Prove:** $\triangle ABC \sim \triangle ACD$



14. **Given:** $PR = 2NP$,
Proof $PQ = 2MP$
Prove: $\triangle MNP \sim \triangle QRP$

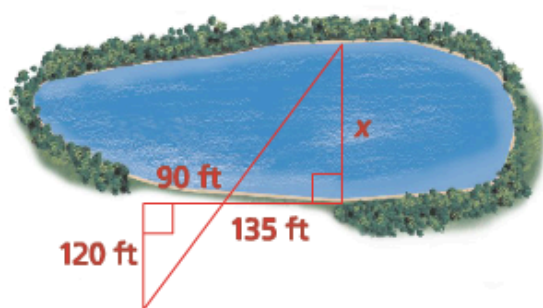


See Problem 3.

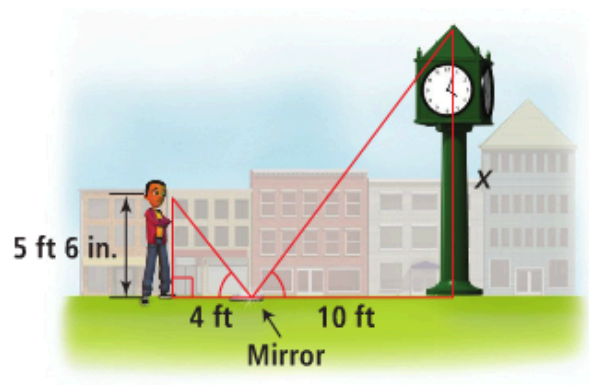
Indirect Measurement Explain why the triangles are similar. Then find the distance represented by x .

See Problem 4.

15.

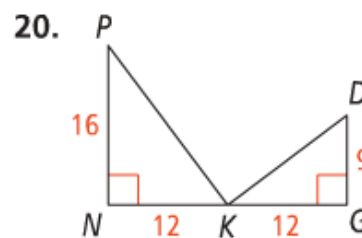
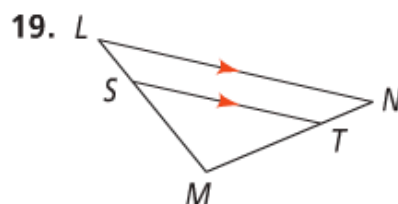
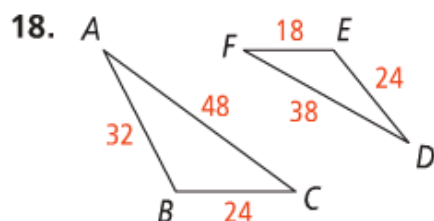


16.



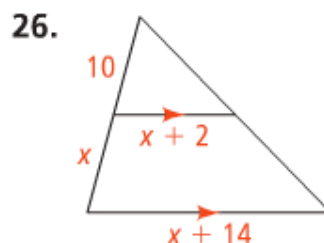
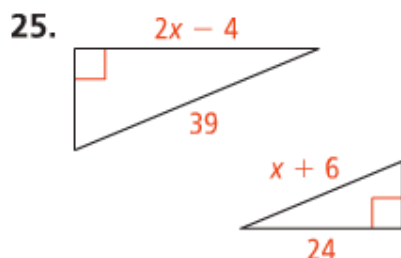
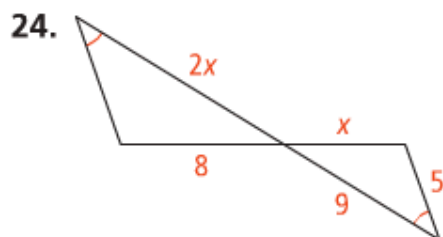
17. **Washington Monument** At a certain time of day, a 1.8-m-tall person standing next to the Washington Monument casts a 0.7-m shadow. At the same time, the Washington Monument casts a 65.8-m shadow. How tall is the Washington Monument?

Can you conclude that the triangles are similar? If so, state the postulate or theorem you used and write a similarity statement. If not, explain.



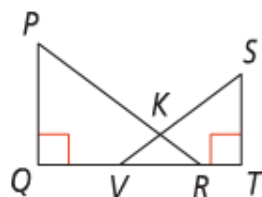
21. a. Are two isosceles triangles always similar? Explain.
b. Are two right isosceles triangles always similar? Explain.
22. **Think About a Plan** On a sunny day, a classmate uses indirect measurement to find the height of a building. The building's shadow is 12 ft long and your classmate's shadow is 4 ft long. If your classmate is 5 ft tall, what is the height of the building?
- Can you draw and label a diagram to represent the situation?
 - What proportion can you use to solve the problem?
23. **Indirect Measurement** A 2-ft vertical post casts a 16-in. shadow at the same time a nearby cell phone tower casts a 120-ft shadow. How tall is the cell phone tower?

Algebra For each pair of similar triangles, find the value of x .



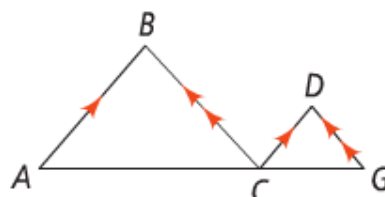
27. **Given:** $\overline{PQ} \perp \overline{QT}$, $\overline{ST} \perp \overline{TQ}$, $\frac{PQ}{ST} = \frac{QR}{TV}$

Proof **Prove:** $\triangle VKR$ is isosceles.



28. **Given:** $\overline{AB} \parallel \overline{CD}$, $\overline{BC} \parallel \overline{DG}$

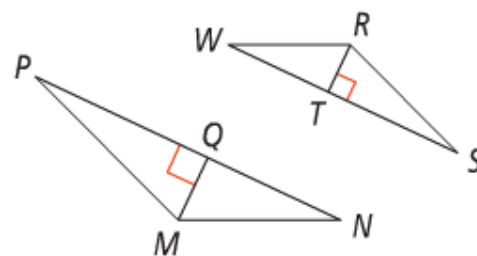
Proof **Prove:** $AB \cdot CG = CD \cdot AC$



29. **Reasoning** Does any line that intersects two sides of a triangle and is parallel to the third side of the triangle form two similar triangles? Justify your reasoning.

30. **Constructions** Draw any $\triangle ABC$ with $m\angle C = 30$. Use a straightedge and compass to construct $\triangle LKJ$ so that $\triangle LKJ \sim \triangle ABC$.

31. **Reasoning** In the diagram at the right, $\triangle PMN \sim \triangle SRW$. $\overline{MQ}$ and $\overline{RT}$ are altitudes. The scale factor of $\triangle PMN$ to $\triangle SRW$ is 4 : 3. What is the ratio of $\overline{MQ}$ to $\overline{RT}$? Explain how you know.



32. **Coordinate Geometry** $\triangle ABC$ has vertices $A(0, 0)$, $B(2, 4)$, and $C(4, 2)$. $\triangle RST$ has vertices $R(0, 3)$, $S(-1, 5)$, and $T(-2, 4)$. Prove that $\triangle ABC \sim \triangle RST$. (Hint: Graph $\triangle ABC$ and $\triangle RST$ in the coordinate plane.)

33. **Proof** Write a proof of the following: Any two nonvertical parallel lines have equal slopes.

Given: Nonvertical lines ℓ_1 and ℓ_2 , $\ell_1 \parallel \ell_2$,

$\overline{EF}$ and $\overline{BC}$ are $\perp$ to the x -axis

Prove: $\frac{BC}{AC} = \frac{EF}{DF}$

