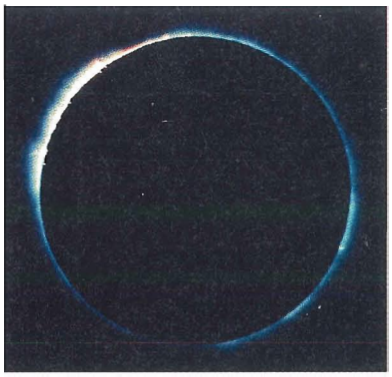
Take Another Look 12.3

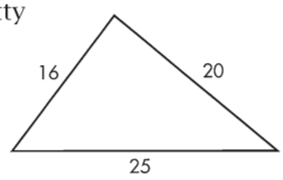
Try one or more of these follow-up activities.

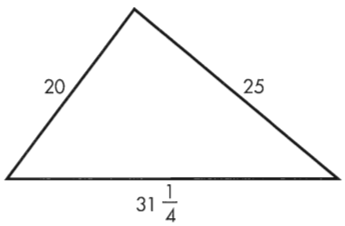
1. Are all isosceles triangles similar? Explain why or give a counterexample to show why not. Are all isosceles triangles with base angles that measure 50° similar? Explain.

2. A friend tells you, "My science teacher says that we get a total eclipse of the sun because the ratio of the moon's diameter to its distance from the earth is about the same as the ratio of the sun's diameter to its distance to the earth. But I don't understand how this works. Can you explain?" Draw a diagram and use similar triangles to explain how this works.



3. It is possible for the three angles and two of the sides of one triangle to be congruent to the three angles and two of the sides of another triangle, and yet the two triangles won't be congruent. Two such triangles are shown at right. Use a geometry computer program or patty papers to find another pair of similar (but not congruent) triangles in which five parts of one are congruent to five parts of another.

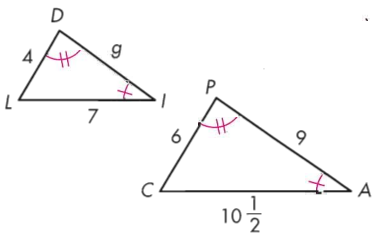




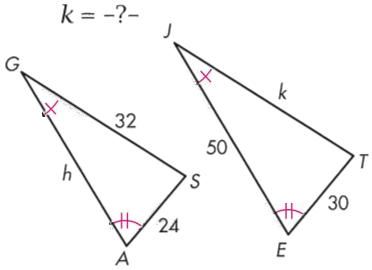
Exercise Set 12.3

Use your new conjectures to solve Exercises 1–14. All measurements are given in centimeters.

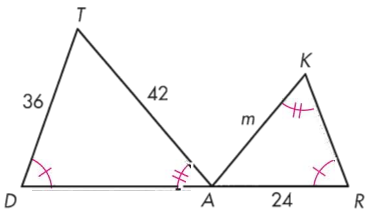
1. g = -?-



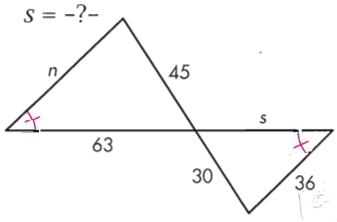
2. h = -?-
k = -?-



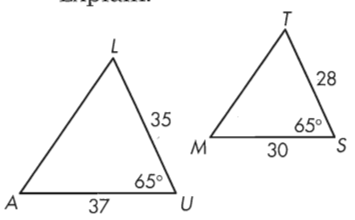
3.* m = -?-



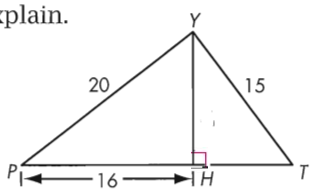
4. n = -?-
s = -?-



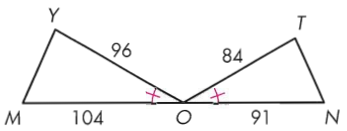
5. Is $\Delta AUL \sim \Delta MST$? Explain.



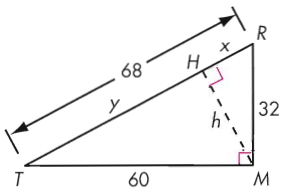
6. Is $\Delta PHY \sim \Delta YHT$? Is ΔPTY a right triangle? Explain.



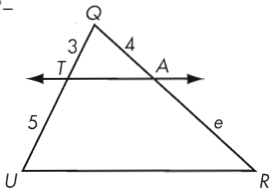
7.* Is $\triangle MOY \sim \triangle NOT$? Explain.



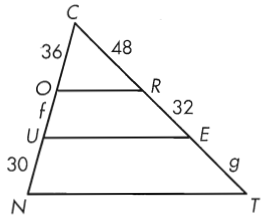
8.* Why is $\triangle TMR \sim \triangle THM \sim \triangle MHR$?
Is $\frac{x}{32} = \frac{32}{60}$? Is $\frac{y}{60} = \frac{60}{68}$?
Find x, y, and h.



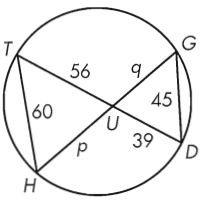
9. $\overline{TA} \parallel \overline{UR}$
Is $\angle QTA \cong \angle TUR$?
Is $\angle QAT \cong \angle ARU$?
Why is $\triangle QTA \sim \triangle QUR$?
e = -?-



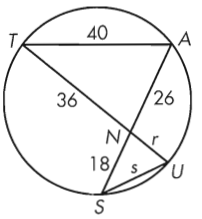
10. $\overline{OR} \parallel \overline{UE} \parallel \overline{NT}$
f = -?-
g = -?-



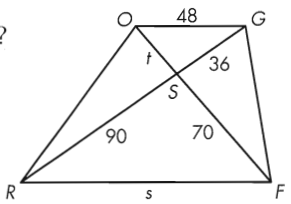
11.* Is $\angle THU \cong \angle GDU$?
Is $\angle HTU \cong \angle DGU$?
Why is $\triangle HUT \sim \triangle DUG$?
p = -?-
q = -?-



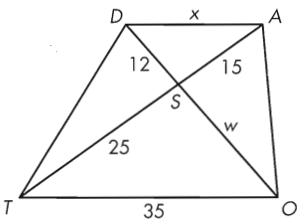
12.* Why is $\triangle SUN \sim \triangle TAN$?
r = -?-
s = -?-



13. *FROG* is a trapezoid.
Is $\angle RGO \cong \angle FRG$?
Is $\angle GOF \cong \angle RFO$?
Why is $\triangle GOS \sim \triangle RFS$?
t = -?-
s = -?-



14. *TOAD* is a trapezoid.
w = -?-
x = -?-

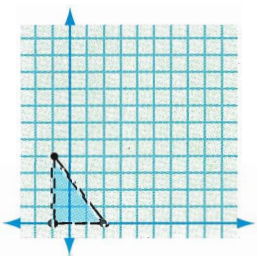


15. Sketch and label two rectangles that are not similar.

16. Sketch and label two isosceles trapezoids that are similar.

For Exercises 17 and 18, use the ordered pair rule to relocate the coordinates of the vertices of each polygon. Is the new figure similar to the original? If they are similar, what is the ratio of the perimeter of the original polygon to the perimeter of the new polygon? What is the ratio of the area of the original polygon to the area of the new polygon?

17. $(x, y) \rightarrow (3x, 3y)$



18. $(x, y) \rightarrow (\frac{1}{2}x, \frac{1}{2}y)$