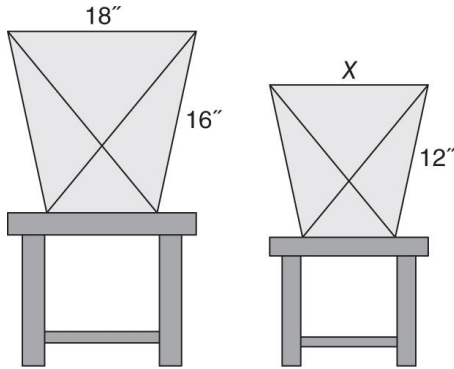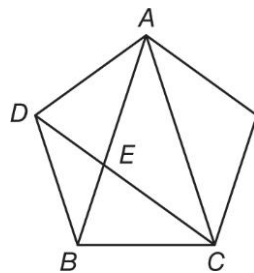# 7-3 Word Problem Practice
Similar Triangles

1. CHAIRS A local furniture store sells two versions of the same chair: one for adults, and one for children. Find the value of x such that the chairs are similar.

18″

X

16″

12″

3. SHADOWS A radio tower casts a shadow 8 feet long at the same time that a vertical yardstick casts a shadow half an inch long. How tall is the radio tower?

4. MOUNTAIN PEAKS Gavin and Brianna want to know how far a mountain peak is from their houses. They measure the angles between the line of site to the peak and to each other's houses and carefully make the drawing shown.

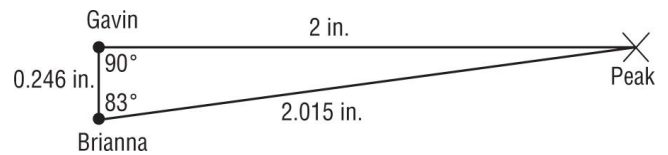Gavin
2 in.
90°
0.246 in.
Peak
83°
2.015 in.
Brianna

2. GEOMETRY Georgia draws a regular pentagon and starts connecting its vertices to make a 5-pointed star. After drawing three of the lines in the star, she becomes curious about two triangles that appear in the figure, $\triangle ABC$ and $\triangle CEB$. They look similar to her. Prove that this is the case.

A

D

E

B

C

The actual distance between Gavin and Brianna's houses is $1\frac{1}{2}$ miles.

a. What is the actual distance of the mountain peak from Gavin's house? Round your answer to the nearest tenth of a mile.

b. What is the actual distance of the mountain peak from Brianna's house? Round your answer to the nearest tenth of a mile.

7-3 Enrichment
Moving Shadows

Have you ever watched your shadow as you walked along the
street at night and observed how its shape changes as you move?
Suppose a man who is 6 feet tall is standing below a lamppost
that is 20 feet tall. The man is walking away from the lamppost
at a rate of 5 feet per second.

20 ft

6 ft

5 ft/sec

x ft
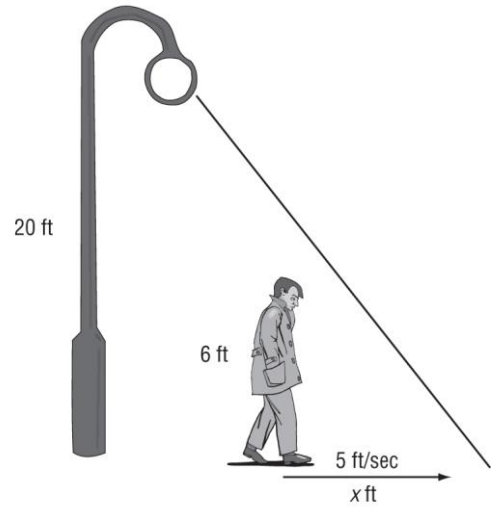
1. If the man is moving at a rate of 5 feet per second, make a
conjecture as to the rate that his shadow is moving.

2. How far away from the lamppost is the man after 8 seconds?

3. How far is the end of his shadow from the bottom of the lamppost after 8 seconds? Use similar triangles to solve this
problem.

4. After 3 more seconds, how far from the lamppost is the man? How far from the lamppost is his shadow?

5. How many feet did the man move in 3 seconds? How many feet did the shadow move in 3 seconds?

6. The man is moving at a rate of 5 feet/second. What rate is his shadow moving? How does this rate compare to the
conjecture you made in Exercise 1? Make a conjecture as to why the results are like this.