Name: _____

4.7 – APPLICATIONS WITH SIMILAR FIGURES

Past due on: _____ Period: _____

*For each problem, set up and solve a proportion.*   SHOW ALL WORK ON A SEPARATE SHEET OF PAPER.

1. Steve and Barbara are sitting on opposite ends of a 12-foot-long seesaw. The fulcrum (support) at the center of the seesaw is 3 feet high. When Steve's end of the seesaw is touching the ground, how many feet off the ground is Barbara's end of the seesaw?
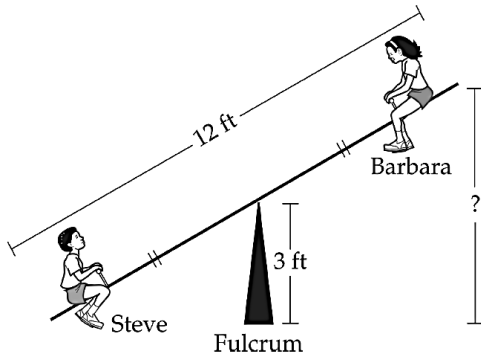

2. Claude placed four stakes in the ground at points *B, C, D,* and *E.* He used a rock on the opposite bank to determine point *A.* His measurements are given and $\overline{AD} \perp$ to both $\overline{BC}$ & $\overline{DE}$. What is the distance across the stream?
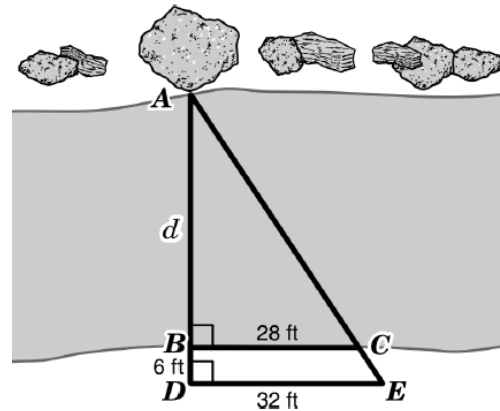
3. Elle and Jeff are on opposite sides of a canyon that runs east to west, according to the graphic. They want to know how wide the canyon is. Each person stands 10 feet from the edge. Then, Elle walks 24 feet west, and Jeff walks 360 feet east. What is the width of the canyon?
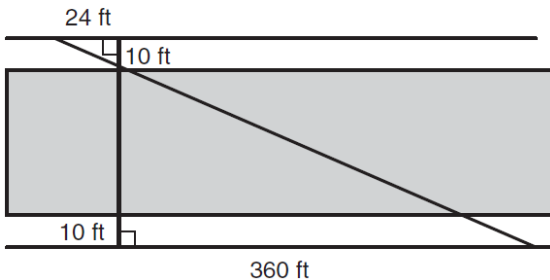

4. In order to find the height of a cliff, you stand at the bottom of the cliff, walk 60 feet from the base, and place a mirror on the ground. Then you face the cliff and step back 5 feet so that you can see the top of the cliff in the mirror. Assuming your eyes are 6 feet above the ground, what is the height of the cliff?
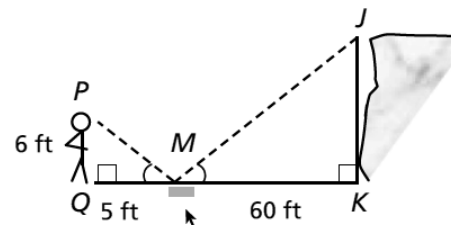

5. You want to measure the height of a tree at the community park. You stand in the tree's shadow so that the tip of your shadow meets the tip of the tree's shadow on the ground, 2 meters from where you are standing. The distance from the tree to the tip of the tree's shadow is 5.4 meters. You are 1.25 meters tall. Draw a diagram to represent the situation and then calculate the height of the tree.

6. In order the measure the distance, *AB,* across a meteorite crater, a surveyor at *S* locates points *A, B, C,* and *D* (as shown). What is *AB*?
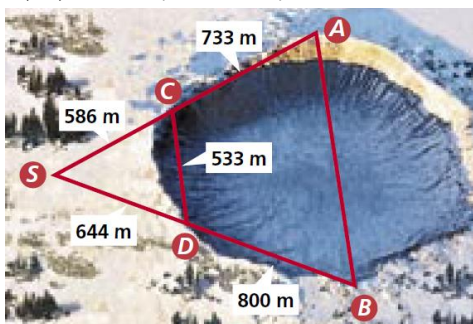

7. Keisha is visiting a museum. She wants to know the height of one of the sculptures. She places a small mirror on the ground between herself and the sculpture, then she backs up until she can see the top of the sculpture in the mirror. What is the height of the sculpture?
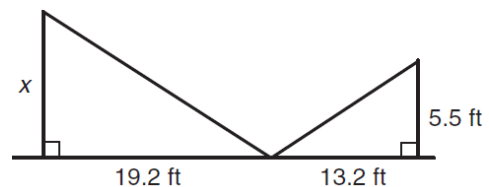
8. Andre is making a map of a state park. He finds a small bog, and he wants to measure the distance across the widest part. He first marks the points A, C, & E. Andre measures the distance shown on the image. Andre also marks point B along AC and point D along AE, such that BD is parallel to CE. What is the width of the bog as the widest point?
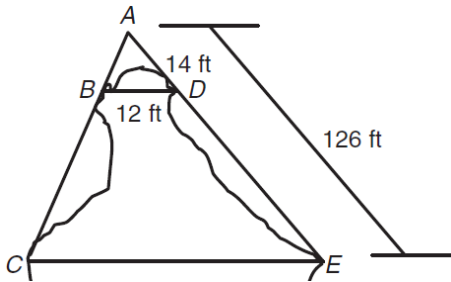

9. Minh wanted to measure the height of a statue. She lined herself up with the statue's shadow so that the tip of her shadow met the tip of the statue's shadow. She marked the spot where she was standing. Then, she measured the distance from where she was standing to the tip of the shadow, and from the statue to the tip of the shadow. What is the height of the statue?
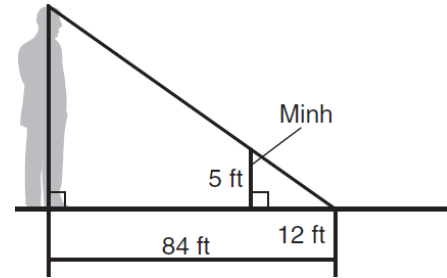
10. To find the distance $\overline{XY}$ across a canyon, you locate points as shown in the figure. What is the distance across the canyon?
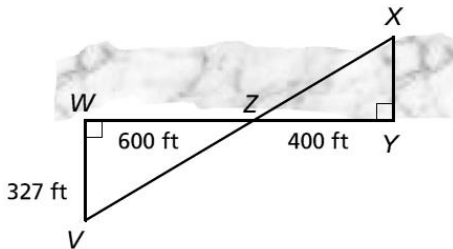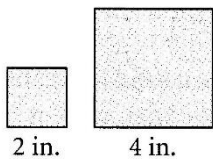

11. Jaclyn is building a slide rail, $\overline{AJ}$, the narrow slanted beam found in skate parks. What is the overall length of the slide rail?
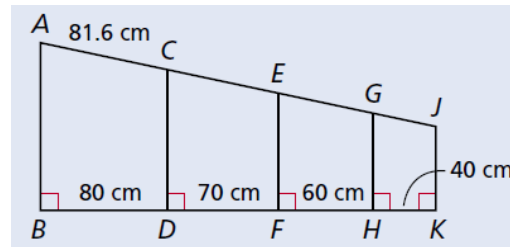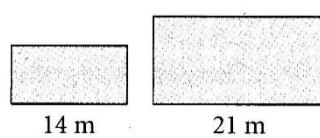

The figures in each pair are similar. Compare the first figure to the second. Give the ratio of the perimeters and the ratio of their areas.
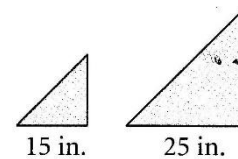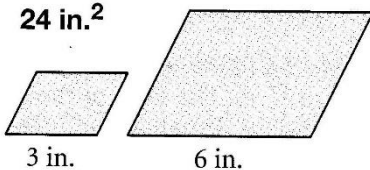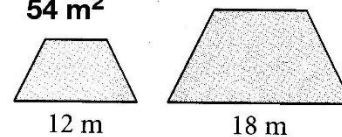
12.

2 in.   4 in.

13.

14 m   21 m

14.

15 in.   25 in.

The figures in each pair are similar. The area of one figure is given. Find the area of the other figure to the nearest whole number.

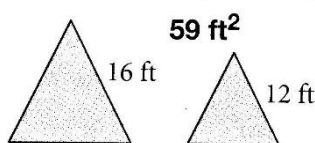15. **24 in.²**

3 in.   6 in.

16. **54 m²**

12 m   18 m

17. **59 ft²**

16 ft   12 ft

18. **439 m²**

13 m   5 m