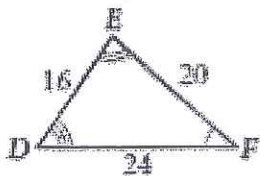
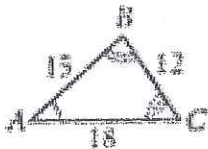


Determine whether the triangles are similar. If they are, write a similarity statement and give the similarity ratio.



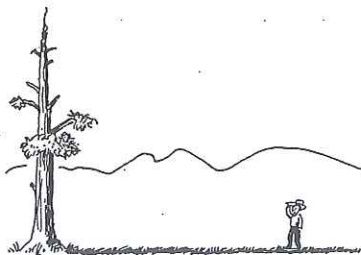
- 2.) Are two congruent figures similar? Justify your thinking.
- 3.) What two symbols form the congruence symbol? Explain why this makes sense?

Logo Design A company logo is a rhombus with 4-cm sides and angles of 60° and 120° . Find the angle measures and side lengths if the logo is changed as follows.

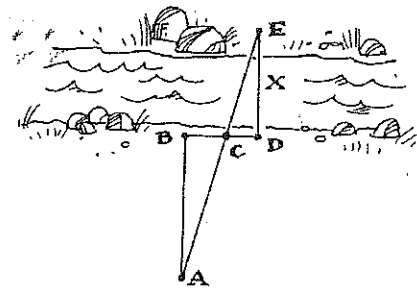
4.) Reduced by 20%.

5.) Are all circles similar? Explain.

- 6.) Ray Sheo has a tall pine tree in his yard that is dying and needs to be cut down. Before he can cut it down, he needs to know how tall it is.
 - a) Ray decided to use what he knew about similar triangles to find the height of the tree. His first step was to stand so that the end of the shadow of the top of his head exactly matched the end of the shadow of the top of the tree. Then he measured the length of his shadow as 5 feet and the shadow of the entire tree as 65 feet. If you know that Ray is 6 feet tall, sketch and label a triangle diagram. Use the information to label the parts of the diagram. Identify the two triangles.
 - b) Write a proportion and solve it to find the height of the tree.



- RS-127. Ray Sheo, owner of the Pro-Portion Ranch, needs to build a bridge over the Roaring River that runs through his land. He has no idea how far it is across the river, but his daughter, Maria, knows she can find out by using the properties of similar triangles. Use the drawing at right and help Maria find the distance across the river.

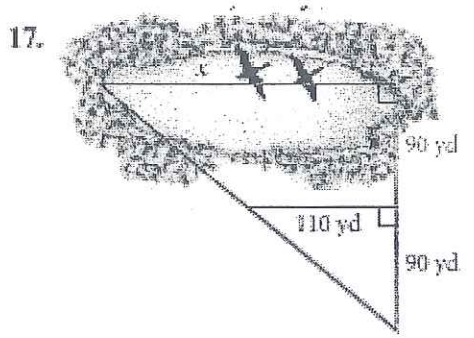
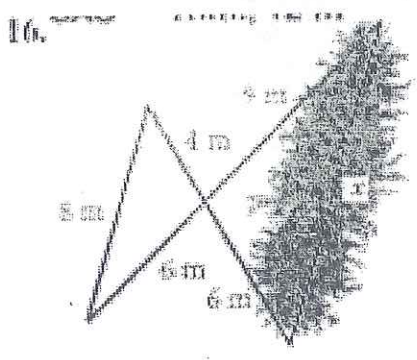


In the diagram, the bridge is to go from D to E. Maria began by walking from D in a direction perpendicular to segment DE. After 6 feet she put a pole at point C and walked another 8 feet to point B. Then she turned away from the river and walked in a direction perpendicular to segment BD until she came to point A, which was 30 feet from point B. From there she could see that A, C, and E were all in a straight line. Her result was two similar triangles, $\triangle ABC$ and $\triangle EDC$.

- Sketch and label the figure on your paper. Be sure to include the measurements. Decide which parts of the two similar triangles correspond. You may want to re-draw the similar triangles so that they are facing the same direction.
- Write a proportion and find the distance across the river.
- The bridge will cost \$1250 per linear foot. Calculate the complete cost of the bridge.
- Ray also needs to build an approach to the bridge on each side of the river. It costs \$17.50 per hour to operate the tractor he will need to do the work. Each approach takes five hours of work. How much will it cost to use the tractor to complete the work?
- What is the total cost of the bridge?

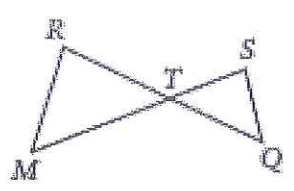
Show all work for credit.

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

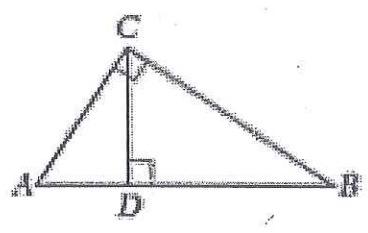


28. Indirect Measurement In sunlight, a vertical yardstick casts a 1-ft shadow at the same time that a nearby tree casts a 15-ft shadow. How tall is the tree?

Omit
 41. Given: $RT \cdot TQ = MT \cdot TS$
 Prove: $\triangle RTM \sim \triangle STQ$



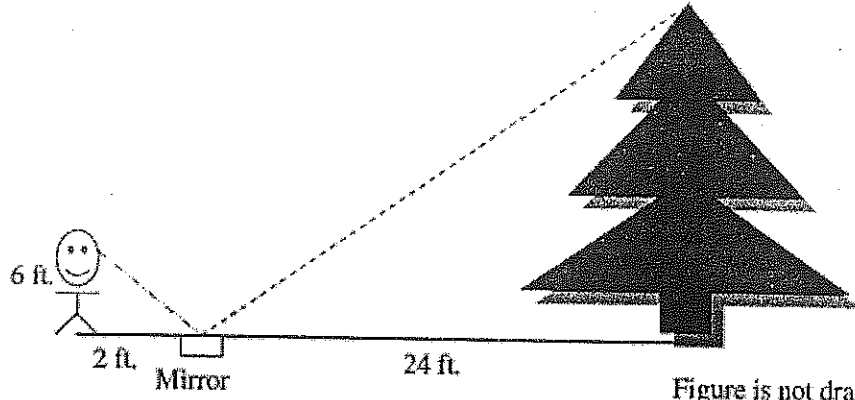
44. There are three similar triangles in the figure at the right. Find them and prove that they are similar.



48. Hank is 6 ft tall. Hank measured the shadow of a tree and found it to be 30 ft long. He then measured his own shadow. It was 10 ft long.
 a. Draw and label a diagram that you could use to find the height of the tree. Write a similarity statement and justify your answer.
 b. Write a proportion and solve it to find the height of the tree.

49.)

1. To determine the height of a very tall pine tree, Aaron places a mirror on the ground and stands where he can see the top of the tree as shown. Aaron is 6 ft. tall and the mirror is 2 ft. from him on the ground when he is able to see the top of the tree.



- a) How tall is the tree? (With correct units)
- c) Now that Aaron knows the height of the tree, his little sister Amber wants to see the top of the tree also. However, she is only 4 feet tall. So she moves the mirror further away from the tree, but leaves the mirror 2 feet from her feet. Draw and label a picture representing this situation.
- d) How far from the base of the tree should Amber place the mirror in order to see the top of the tree? (With correct units)
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