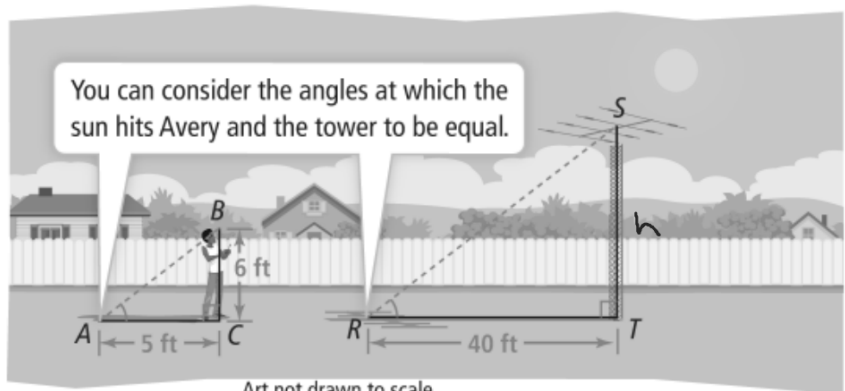
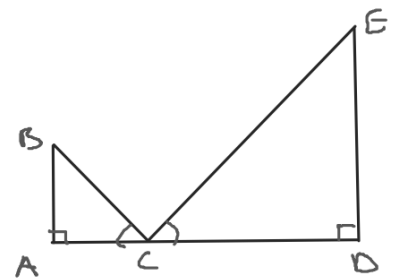
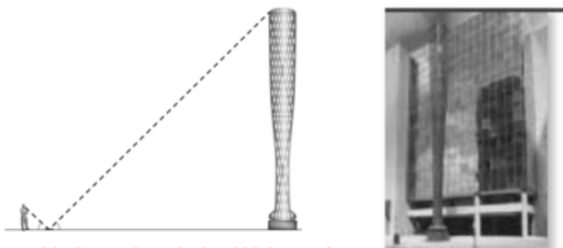


) Avery puts up a radio antenna tower in his yard. Ella tells him that their city has a law limiting towers to 50 ft in height. How can Avery use the lengths of his shadow and the shadow of the tower to show that his tower is within the limit without directly measuring it?



$$\frac{5}{6} = \frac{40}{h}$$
$$5h = 240$$
$$h = 48 \text{ ft}$$

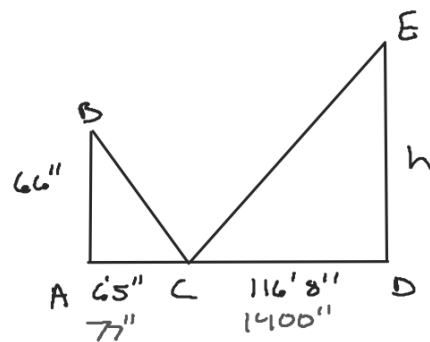
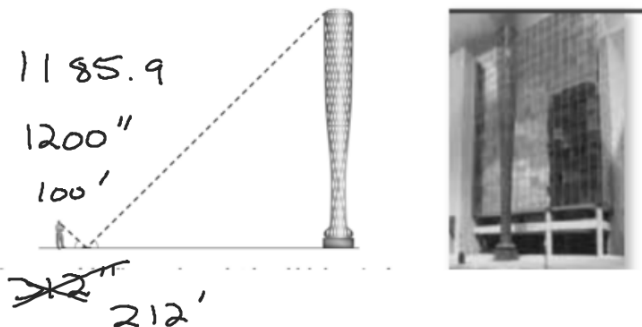
Suppose a mirror is placed on the ground as shown. You position yourself to see the top of the sculpture reflected in the mirror. An important property of physics states that in such a case, the angle of incidence is congruent to the angle of reflection.



9. Prove that the two triangles are similar.

Statement	Reason
1) $\angle ACB \cong \angle DCE$	1) Given
2) $\angle A \cong \angle D$	2) All rt \angle 's \cong
3) $\triangle BAC \sim \triangle EDC$	3) AA

Suppose a mirror is placed on the ground as shown. You position yourself to see the top of the sculpture reflected in the mirror. An important property of physics states that in such a case, the angle of incidence is congruent to the angle of reflection.



10. Add to your diagram the following measurements.

- The ground distance between you and the mirror image of the top of the column is 6 feet 5 inches.
- The ground distance between the mirror image and the base of the column is 116 feet 8 inches.
- Assume that the distance from the ground up to your eyes is 66 inches.

$$\frac{66}{77} = \frac{x}{1400}$$

$$\frac{77x}{77} = \frac{92400}{77}$$

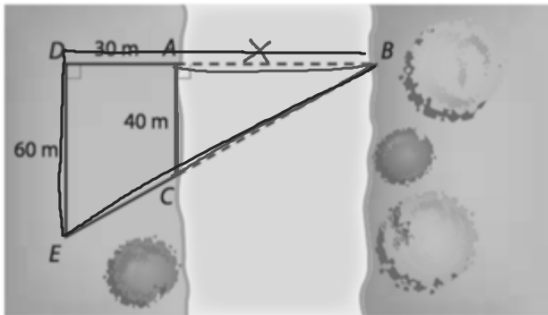
$$x = 1200''$$

$$x = 100 \text{ ft}$$

About how tall is the column?

11. As part of their annual October outing to study the changing colors of trees in northern Maine, several science club members from Pland Regional High School decided to test what they were learning in their math class by finding the width of the Penobscot River at a particular point A as shown below.

Pacing from point A, they located points D, E, and C as shown in the diagram below.



What is your estimate of the width of the river at point A?

60
20
75
40

$$\frac{X}{X+30} = \frac{40}{60}$$

$$60X = 40X + 1200$$

$$20X = 1200$$

$$X = 60 \text{ m}$$

