

RELATED RATES (4.6)

NAME \_\_\_\_\_

1. A conical tank is being filled with water. The tank has height 4 ft and radius 3 ft. If water is being pumped in at a constant rate of 2 cubic inches per minute, find the rate at which the height of the cone changes when the height is 26 inches. Note the difference in units.

2. A searchlight is positioned 10 meters from a sidewalk. A person is walking along the sidewalk at a constant speed of 2 meters per second. The searchlight rotates so that it shines on the person. Find the rate at which the searchlight rotates when the person is 25 meters from the searchlight.

3. A person 5 feet tall is walking toward an 18 foot pole. A light is positioned at the top of the pole. Find the rate at which the length of the person's shadow is changing when the person is 30 feet from the pole and walking at a constant speed of 6 feet per second.

4. The length of a rectangle increases by 3 feet per minute while the width decreases by 2 feet per minute. When the length is 15 feet and the width is 40 feet, what is the rate at which the following changes:

A. area

B. perimeter

C. diagonal