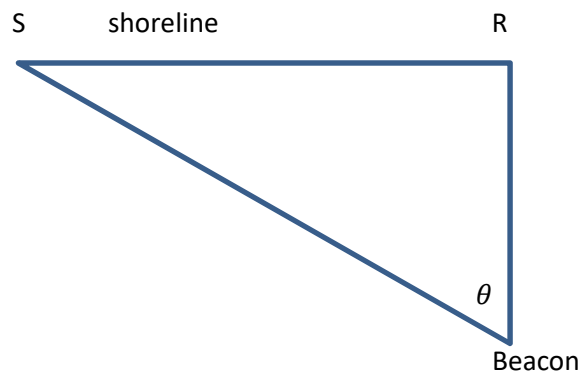


## Related Rates Review

1. The radius of a spherical balloon is expanding at a rate of 14 in/min. At what rate is the volume changing when the radius is 8 inches.

2. A beacon, located on a perpendicular distance of 315m from point R on a straight shoreline, revolves at 1 rev/min. How fast does its beam sweep along the shoreline at point S on the shoreline 425m from R?



3. Sand is being dumped from a conveyor belt at a rate of  $1.2 \text{ m}^3/\text{min}$  and forms a pile in the shape of a cone whose base diameter and height are always equal. How fast is the height of the pile growing when the pile is 3m high?

4. A man is walking north at a speed of  $1.5 \text{ m/s}$  and a woman starts at the same point P at the same time walking west at a speed of  $2 \text{ m/s}$ . At what rate is the distance between the man and the woman increasing one minute later?