

Related Rates

- 1) 2 ships leave port at noon. One ship sails north at 6 miles per hour. The other sails east at 8 miles per hour. At what rate are the 2 ships separating 2 hours later?
- 2) A spherical balloon is inflated so that its volume is increasing at the rate of 3 cubic feet per minute. How fast is the radius of the balloon increasing at the instant the radius is $\frac{1}{2}$ foot?
- 3) Sand is falling into a conical pile so that the radius of the base of the pile is always equal to one half of its altitude. If the sand is falling at the rate of 10 cubic feet per minute, how fast is the altitude of the pile increasing when the pile is 5 ft deep?
- 4) A straw is used to drink soda from the bottom of a cylindrical shaped cup. The diameter of the cup is 3 inches. The liquid is being consumed at the rate of 3 cubic inches per second. How fast is the level of soda dropping?
- 5) An angler has a fish at the end of his line, which is being reeled in at the rate of 2 feet per second from a bridge 30 feet above the water. At what speed is the fish moving through the water towards the bridge when the amount of line out is 50 feet?