

Due: TODAY ONLY

Solve these Related Rates Problems
No Calculators, No Phones. Fractions, not decimals

1. A screen saver displays the outline of a 2 cm by 3 cm rectangle and then expands the rectangle in such a way that the short side is expanding at the rate of 4 cm/sec and the ratio of the sides of the rectangle remains constant.

How fast is the area of the rectangle increasing when its dimensions are 10 cm by 15 cm?

2. A rectangular swimming pool is 12 meters long, 6 meters wide, 1 meter deep at the shallow end, and 3 meters deep at the deep end. Water is being poured into the pool at a rate of $\frac{1}{2}$ cubic meter per minute. At the moment when the water is 1 meter deep, how fast is the water's depth increasing?

3. A receptacle is in the shape of an inverted square pyramid 10 inches in height and with a 6×6 square top. The volume of a pyramid of this shape is

$$V = \frac{1}{3}x^2h$$

where x is the length of a side of the square top.

Suppose that the receptacle is being filled with water at the rate of 0.2 cubic inches per second. How fast is water rising when it is 2 inches deep?