

## Conditions

a trough is 10 ft long and its ends have the shape of isosceles triangles that are 3 ft across the top and have a height of 1 ft. if the trough is being filled with water at a rate of 12 feet cubed per min. how fast is the water level rising when the water is 6 inches deep?

## Solution

This is an example to use formula of the volume of prism.

$$V = \frac{1}{2} bhl$$

where b is the triangle base length, h is the triangle height, and l is the length between the triangles.

So, if 1 foot = 12 inches, than we must calculate the volume for a prism with  $h=6/12=1/2$  ft

$$V = \frac{3}{2} \cdot \frac{1}{2} \cdot 10 = \frac{15}{2}$$

And the time is

$$\frac{15}{2} = \frac{15}{24} = \frac{37,5}{60} \text{ min}$$

**Answer: The 6 inch deep will be filled in 37.5 seconds.**