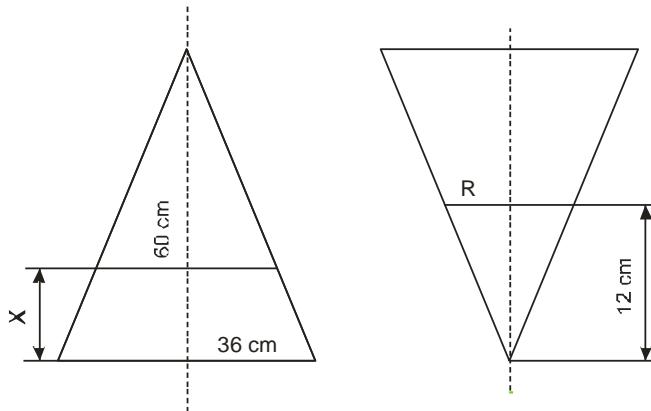


A closed conical vessel, has height 60 cm, and radius 36 cm, has some water. When the vertex is held down, the height of water is 12 cm. What will be the height of water, when the vertex is up?

Solution:



Let:

$$H = 12 \text{ cm}$$

$$H_0 = 60 \text{ cm}$$

$$R_0 = 36 \text{ cm}$$

V_0 — value of cone

$X - ?$

$$V = \frac{1}{3}\pi R^2 H \text{ value of water}$$

$$V = \frac{1}{3}\pi \left(R_0 \frac{H}{H_0}\right)^2 H$$

$$\frac{X}{H_0} = \frac{V}{V_0} = \frac{\frac{1}{3}\pi \left(R_0 \frac{H}{H_0}\right)^2 H}{\frac{1}{3}\pi R_0^2 H_0} = R_0 \frac{H^3}{H_0^2}$$

$$X = R_0 \frac{H^3}{H_0^2} = 36 * \frac{12^3}{36^2} = 1.33 \text{ cm.}$$

Answer: 1.33 cm.