

**Answer** on Question #62629, Physics / Mechanics | Relativity

If I drop a rock off a cliff into the water and 3.4 seconds after I drop the rock I hear the splash, how high is the cliff? What formula do I have to use to find this solution?

**Find:**  $h$ -?

**Given:**

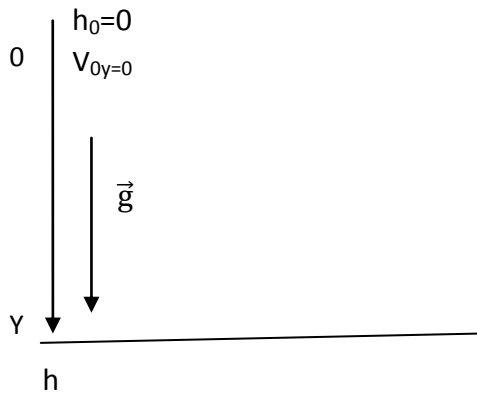
$$v_{0y}=0 \text{ m/s}$$

$$t=3.4 \text{ s}$$

$$g=9.8 \text{ m/s}^2$$

**Solution:**

The body accelerated by gravity uniformly along OY.



Displacement:

$$h = h_0 + v_{0y}t + \frac{g_y t^2}{2} \quad (1)$$

$$\text{Of (1)} \Rightarrow h = 0 + 0 + \frac{gt^2}{2} \quad (2)$$

$$\text{Of (2)} \Rightarrow h = \frac{gt^2}{2} \quad (3)$$

$$\text{Of (3)} \Rightarrow h=56.644 \text{ m}$$

Sound travels in the air after falling of rock. The sound speed in air: 340 m/s. Therefore the time of movement of sound in air is a little.

**Answer:**

$$h=56.644 \text{ m}$$