

Answer on Question #69589-Physics / Other

A child throws a ball vertically upwards and catches the ball $\tau = 2.00$ s later. The acceleration due to gravity, $g = 10$ m/s². So what is the maximum height in meters that the ball reaches if she throws it at $u = 20$ m/s initial velocity?

Solution

Error in task!

For the initial speed of the ball 20 m/s, the time must be 4.00 s.

The maximum height is

$$h_{\max} = ut - \frac{gt^2}{2}, \quad t = \frac{\tau}{2} = 2.00 \text{ s.}$$

$$h_{\max} = 20 \times 2 - \frac{10 \times 2^2}{2} = 20 \text{ m.}$$

Answer: $h_{\max} = 20$ m.

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