Answer on Question #46407, Physics, Mechanics | Kinematics | Dynamics

A basketball player achieves a hang time of position (m) 0.505 s in dunking the ball. What vertical height will he attain? The acceleration of gravity is 9.8 m/s^2. Answer in units of m.

Given:

$t_{all} = 0.505$ s,

$g = 9.8$ m/s^2,

$h =?$

Solution:

Free fall as the word states is body falling freely due to the gravitational pull of the earth.

Consider a body falling freely from height h for time *t* seconds due to gravity *g*.

Free Fall Formula is

$$h = \frac{1}{2}gt^2$$

The time of falling is

$$t = \frac{t_{all}}{2} = \frac{0.505}{2} = 0.2525 \text{ s}$$

Thus,

$$h = \frac{1}{2} \cdot 9.8 \cdot 0.2525 = 1.23725 \approx 1.24 \text{ m}$$

Answer: $h = 1.24$ m