

A basketball is tossed upwards with a speed of $5.0 \frac{\text{m}}{\text{s}}$. We can ignore air resistance.

What is the maximum height reached by the basketball from its release point?

Kinematic Equations for Motion with Constant Acceleration (g) along the Y axis (Vertically)

$$V = V_o + g t$$

$$Y = 1/2 (V_o + V) t$$

$$V^2 = V_o^2 + 2 g Y$$

$$Y = V_o t + 1/2 g t^2$$

Y Displacement	a acceleration	t time	V_o = V_i initial velocity	V = V_f Final velocity
?	- 9.8 m/s²		5.0 m/s	top 0 m/s

$$V^2 = V_0^2 + 2 g Y$$

$$\begin{array}{r} 0 \\ -25 \end{array} = \begin{array}{r} 25 \\ -25 \end{array} + 2 (-9.8) Y$$

$$-25 = - 19.6 y$$

$$\frac{-25}{-19.6} = \frac{-19.6}{-19.6} Y$$

$$1.27 \text{ m} = Y$$

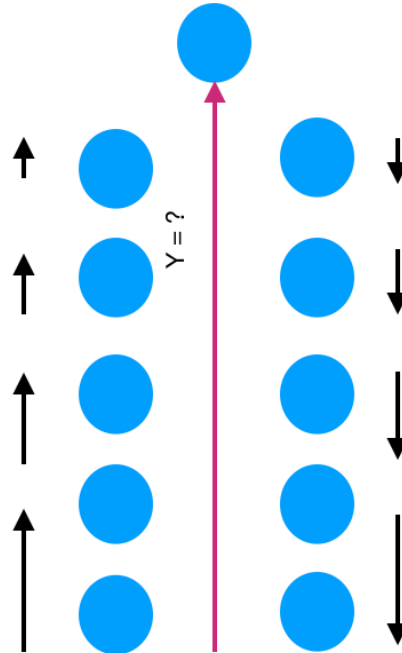


$g = -9.8 \text{ m/s}^2$
Free Fall



$V_0 = 5 \text{ m/s [up]}$
 $= 5 \text{ m/s}$

$V_{\text{top}} = 0 \text{ m/s}$
maximum height



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