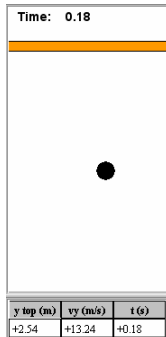


## Worksheet for Exploration 2.6: Toss the Ball to Barely Touch the Ceiling



To show your coordination, you try to toss a ball straight upward so that it just barely touches the ceiling (**position is given in meters and time is given in seconds**). What initial velocity is required? In this Exploration the acceleration of the ball is  $-9.8 \text{ m/s}^2$ . Calculate this initial velocity and then test your answer by typing the initial velocity in the text box and clicking the "set velocity and play" button. [Restart](#).

- Calculate the velocity required to just have the ball reach the ceiling. Check to see that this is correct by running the animation.

$$V_{\text{launch}} = \underline{\hspace{2cm}}$$

- For the speed in i, how fast is the ball moving halfway to the ceiling. Explain this result.

$$V_{\text{half height}} = \underline{\hspace{2cm}}$$

- At what time do you expect the ball to move at half the speed that it was launched at, and what height is that? Be able to predict these results.

$$t_{\text{half speed}} = \underline{\hspace{2cm}}$$

$$\text{height} = \underline{\hspace{2cm}}$$