

# Free Fall Mini Labs

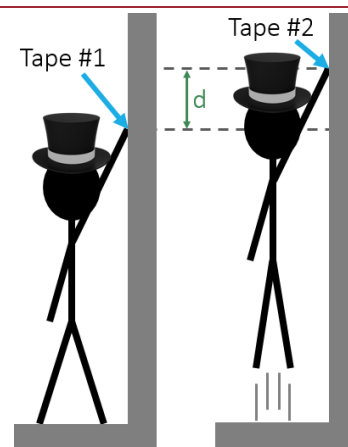
Name: \_\_\_\_\_ Period: \_\_

## Air Time – [Video Tutorial](#)

Calculate the air time of your jump without using a stop watch

### Procedure:

- Standing flat footed next to the wall, place a piece of tape as high up as you can reach.
- Stick second piece of tape on the wall as high as you can by jumping straight up.
- Measure the distance between the two pieces of tape and calculate your total air time.  
Be careful!! Going up to the top is just half of your total air time.



## Reaction Time – [Video Tutorial](#)

Calculate your reaction time without a stop watch

### Procedure:

Using your knowledge of physics, calculate your reaction time when catching and dropping a ruler

- It's probably a good idea to collect multiple trials worth of data and average them before calculating anything with our motion equations...



Check your answer using [www.humanbenchmark.com/tests/reactiontime](http://www.humanbenchmark.com/tests/reactiontime)

Online Reaction Time Test					
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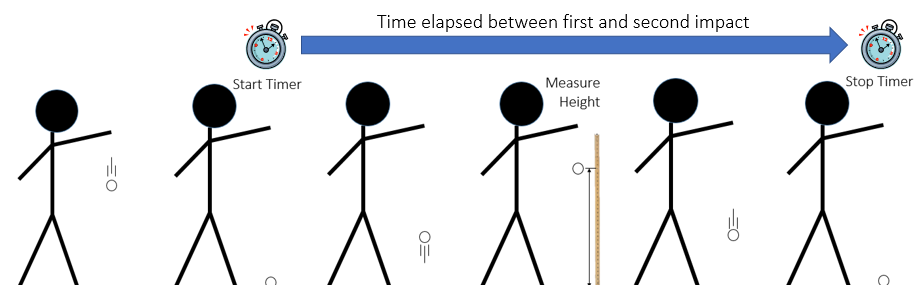
# Follow the Bouncing Ball – [Video Tutorial](#)

Using a simple bouncing ball, measure and calculate the acceleration due to gravity.

Scientist #1 - Dropper	Scientist #2 - Measurer	Scientist #3 - Timer
<i>Tallest in the Group</i>	<i>Middle height in the Group</i>	<i>Shortest in the Group</i>

## Procedure:

- Scientist #1** (the dropper), stands next to the wall, reaches as high as they can and drops the golf ball.
- Scientist #2** (the timer) starts the stopwatch when the ball hits the ground the 1<sup>st</sup> time.
- Scientist #3** (the measurer) marks the highest spot on the wall that the ball reaches on the first bounce and measures it in meters.
- Scientist #2** (the timer) stops the stopwatch when the ball hits the ground the 2<sup>nd</sup> time.
- Repeat steps 1-4 five times to complete the table below



Trial #	Time between 1 <sup>st</sup> and 2 <sup>nd</sup> bounce	Maximum height of first bounce
1		
2		
3		
4		
5		
Average		

## Analysis

List the data that you know from your measurements and **solve for the acceleration due to gravity**. For simplicity, only look at half of the time between bounces (time moving up or time moving down).