

NAME: _____

Date: _____

= Total Velocity

= Vertical Velocity

= Horizontal Velocity

Instructions: Fire your catapult 5 times with one student recording the distance the object travels (in meters) and record it in the table below. Fire the catapult 5 more times with one student recording the time that the object is in the air (in seconds rounding to the nearest hundredth of a second). Find the average distance and times.

Trial: 1	Distance (m):	Time (s):
Trial: 2	Distance (m):	Time (s):
Trial: 3	Distance (m):	Time (s):
Trial: 4	Distance (m):	Time (s):
Trial: 5	Distance (m):	Time (s):
Averages	Ave. Distance (m):	Ave. Time (s):

Now we will calculate different aspects of your catapult.

Use the figure above to find the average horizontal velocity.

- My average rate is _____

To find the average vertical velocity, we will use the equation for the time it takes for an object to hit the ground, starting from the ground, given an initial vertical velocity v .

- My average vertical velocity is _____

Now you will fire your catapult off your desk to try to hit your target. First measure the height of the desk (in meters). This is your initial height .

- My initial height is _____.

Use the below equation to calculate the time your object will be in the air.

With your average vertical velocity and your initial height. To find the time t , use the quadratic equation.

Calculate how far the target should be placed using average horizontal velocity and the time you calculated above.

- Distance traveled = _____

Have an instructor stop by to judge your accuracy.