

Name: _____

Date: _____

Calculating “g”

Objective:

To recreate Galileo’s experiments for determining the value for acceleration due to gravity.

Procedure:

1. Measure the length of an inclined plane. Record it in the table below.
2. Elevate the inclined plane so that a ramp is created. Measure the vertical distance from the top of the ramp to the floor. Record this is in the table for trial 1.
3. Place a ball at the top of the ramp. Release the ball and time how long it takes to reach the bottom. Record this time in the table. Repeat for three total times.
4. Repeat these steps for a total of seven different heights.

Data:

Length of inclined plane: _____

Trial	Height (cm)	Time 1 (s)	Time 2 (s)	Time 3 (s)
1				
2				
3				
4				
5				
6				
7				

Calculations:

Trial	Average Time (s)	“x” $\frac{\text{Height}}{\text{Length}}$	“y” Acceleration (m/s^2)
1			
2			
3			
4			
5			
6			
7			

Acceleration is calculated as follows:

$$a = \frac{2d}{t^2}$$

Show all work below:

Construct a graph of acceleration vs. Height/Length. Scale the x-axis from 0 to 1. Scale the y-axis from 0 to 12. Plot your points and draw the best fit line. Estimate the value for acceleration when the x-value (height/length) equals 1. Is it close to 10? If so, congratulations – you successfully calculated the value for gravity of Earth as accurately as Galileo.