

Worksheet 2: 1D Free Fall

Name: _____

Due February 12, 2026

Partner: _____

Physical Measurements		
Parameter	Unit	Measured Value
d_1 (camera lens to whiteboard)		\pm
d_2 (ball to whiteboard)		\pm
Video Frame Rate		\pm

Calculations Using Position vs .Time ($y = c_1 t^2 + c_2 t + c_3$)		
Parameter	Unit	Result
c_1		\pm
c_2		\pm
c_3		\pm
g calculated		\pm

Discuss:

You have two “final” results for g .
Which is more believable, and why do you think that?

Calculations Using Velocity vs .Time ($y = c_4 t + c_5$)		
Parameter	Unit	Result
c_4		\pm
c_5		\pm
g calculated		\pm

Let’s try that one again. *Why* do you think the uncertainty was smaller when using the position plot compared to using the velocity plot?

Calculations Corrected For Parallax		
Parameter	Unit	Result
g (corrected x vs. t)		\pm
g (corrected v vs. t)		\pm
g (accepted)		\pm

How well did each measurement agree with the expected value? _____

Since the uncertainty you reported is 100% random error, how might you modify this experiment to repeat it and obtain a smaller (random error) uncertainty?
