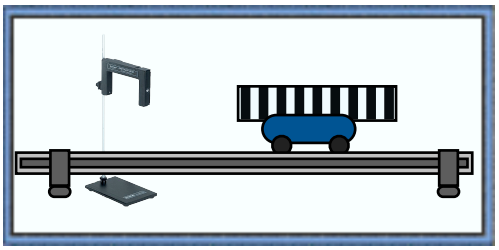
Acceleration On an Incline

Name _____ **Date** _____

Title: The acceleration of gravity.



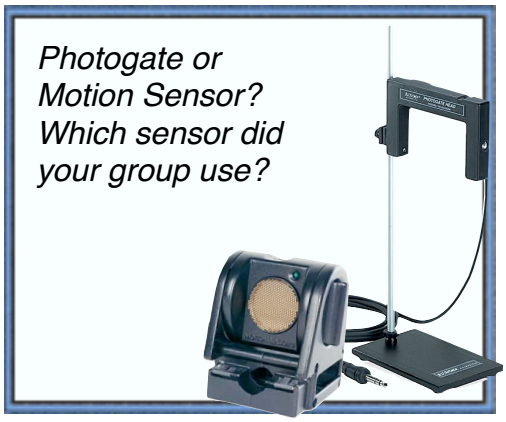
Purpose:

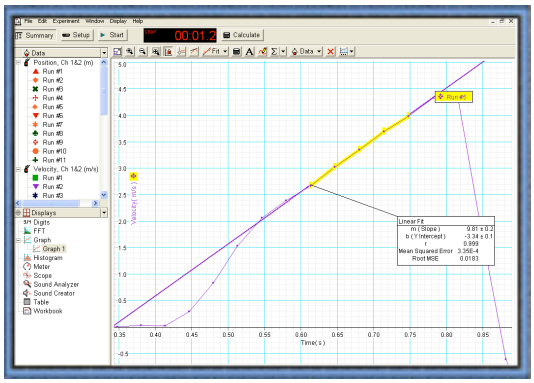
To experimentally find the acceleration of gravity, and compare it to the accepted value of 9.8 m/s^2.

Materials & Procedure:

In this experiment, you may use one of two accepted methods. Students made a similar choice during the free fall lab. A motion sensor can be used to watch the car roll down the inclined track. If the picket fence and photogate combination is used, the height of the gate must allow for the height of the track, the car, and a picket fence on the car too.

You and your partners will probably need to do several trial runs before you are satisfied with your graph. Do not delete these practice trials.

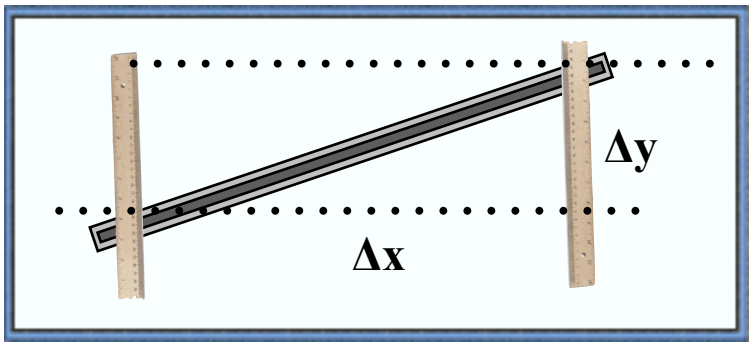




Data:

Capture the screen for one of your good values and include this in your lab report.
The data section of your lab should also include qualitative observations. This might include the reason for skipping a single trial that did not work. If you have changed your procedure in the middle of the experiment, observations would also include the reasons for this decision.

Calculations: In this second version of the acceleration experiment, students are often surprised that the car does not accelerate at 9.8 m/s^2. The angle of incline will change the predicted acceleration. To find the angle, we can follow the methods learned with vectors in a previous chapter.



Measure the height of the incline from the lab table at two different places on the track. The angle of incline can be found by calculating the inverse tangent of the slope (y/x).

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Trial Number	***Acceleration*** *(Find Slope)* ***(m/s²)***	***Δy Rise***	***Δx Run***	***θ*** *(The angle of incline)* $Tan^{-1}\frac{y}{x}$	***Gravity:*** $\frac{\vec{a}}{sin\theta}$
	Average Result				
	Percent Error				

Conclusions:

In your conclusion, discuss the possible sources for error in your experiments. Do not invent errors that did not occur Explain why your group selected the sensor (motion or photogate) that you used.