**Finding velocity with a photo-gate**

Group Member’s Names:

A photo-gate has three main parts: a light source, a light detector, and a computer. The way it works is when the light detector on one side of the gate is able to receive light from the light source on the other side of the gate, the computer knows there is nothing passing between the two sides of the gate. When something passes between the gate it blocks the beam of light traveling from the source to the sensor. The computer detects this and begins the timer. Once the item moves out of the gate the light from the source hits the sensor again and the computer stops the timer. This allows us to know the total time it takes for an object to pass through the gate.



Computer

Light source

Light detector

Pre-activity questions:

1.) What are the two things that we need in order to calculate an object’s velocity?

2.) How do you think we could use the photo-gate to measure an objects velocity?

Activity:

* Have a member of your group come get the following materials from Mr. O’Block: photo-gate and computer, notecard, physics cart.

Your challenge is to measure the cart’s velocity using your knowledge of velocity and the photo gate provided. Please list the steps of your procedure you used to measure your cart’s velocity below.

Procedure steps:

Once you have figured out a procedure that works measure the cart’s velocity three times. Show your calculations below:

Trial #1: Trail #2: Trial #3: