

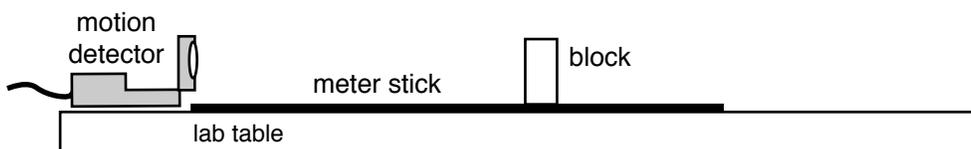
Pre-Lab 2-2: Motion Detectors

Purpose: To learn how to use Logger Pro and the motion detectors in lab.

Materials: 1 small block 1 meter stick 1 motion detector

Procedure:

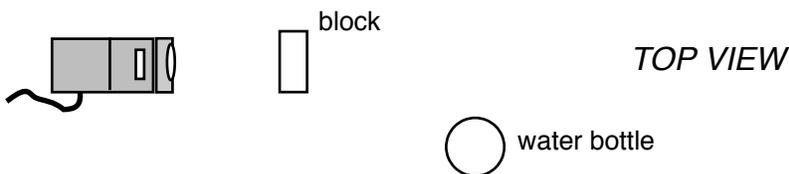
1. Make sure the motion detector is plugged into the "DIG 1" port on the Lab Quest. (It is on the side of the Lab Quest, under a flappy cover.) Make sure the Lab Quest is plugged into an outlet AND that it is plugged into the computer with a USB cable. *This is the last time we will ever point out these things in a lab - so please, in the future if something doesn't seem to be working, make sure everything is plugged in.*
2. Start up Logger Pro. When you want to take data, click on the green button marked "Collect" in the upper right corner of the window. Click it a few times to see what happens.
3. Set up the motion detector and meter stick on the lab table as shown below. Make sure that the switch on the motion detector is set to the cart and not the ball.



4. Place the block 1 meter away from the motion detector. Hit "Collect" and then slowly move the block towards the motion detector. Stop occasionally to compare the distance shown by Logger Pro and the actual distance using the meter stick. They should be pretty close up until a certain distance.

A. *What is the closest an object can be to the motion detector for Logger Pro to accurately measure its position?*

B. *What does Logger Pro say the distance is if you put the block right next to the motion detector?*



5. Now place the block 30 cm in front of the motion detector, and put a water bottle about 60 cm away, but not quite in front of the motion detector. Hit "Collect" and then slowly move the block backwards, comparing the Logger Pro distance to the meter stick.

C. *What does Logger Pro do after the block has is farther than the water bottle?*