Experiment: Motion

Test in DAY 1 - IN CLASS

2 FEB

A+ GRADE

1 Please type the **full names** of all of your group members below.

0pts

0 / 0

2 How quick do you think your reactions are? Let’s find out!

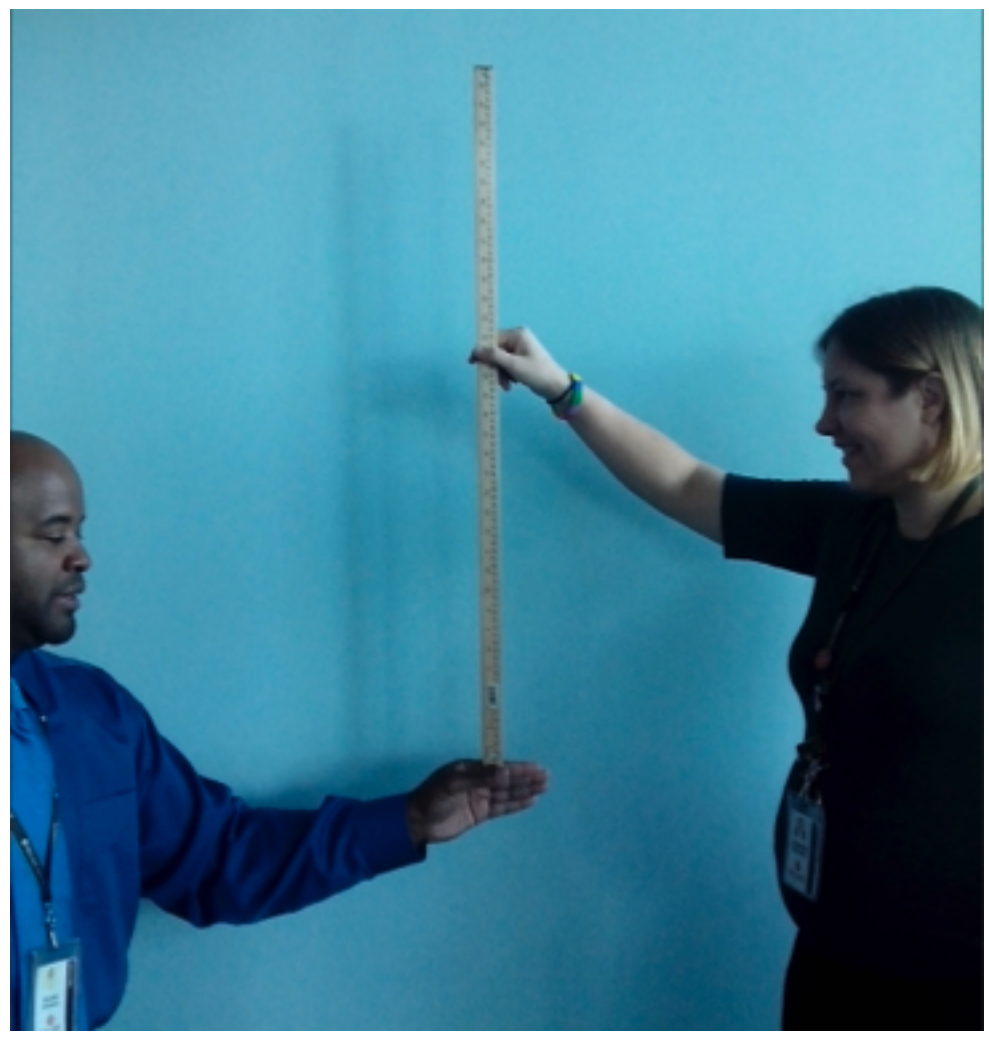
Supplies:

- Yard stick
- Table/Chair to stand on (optional if you’re tall!)

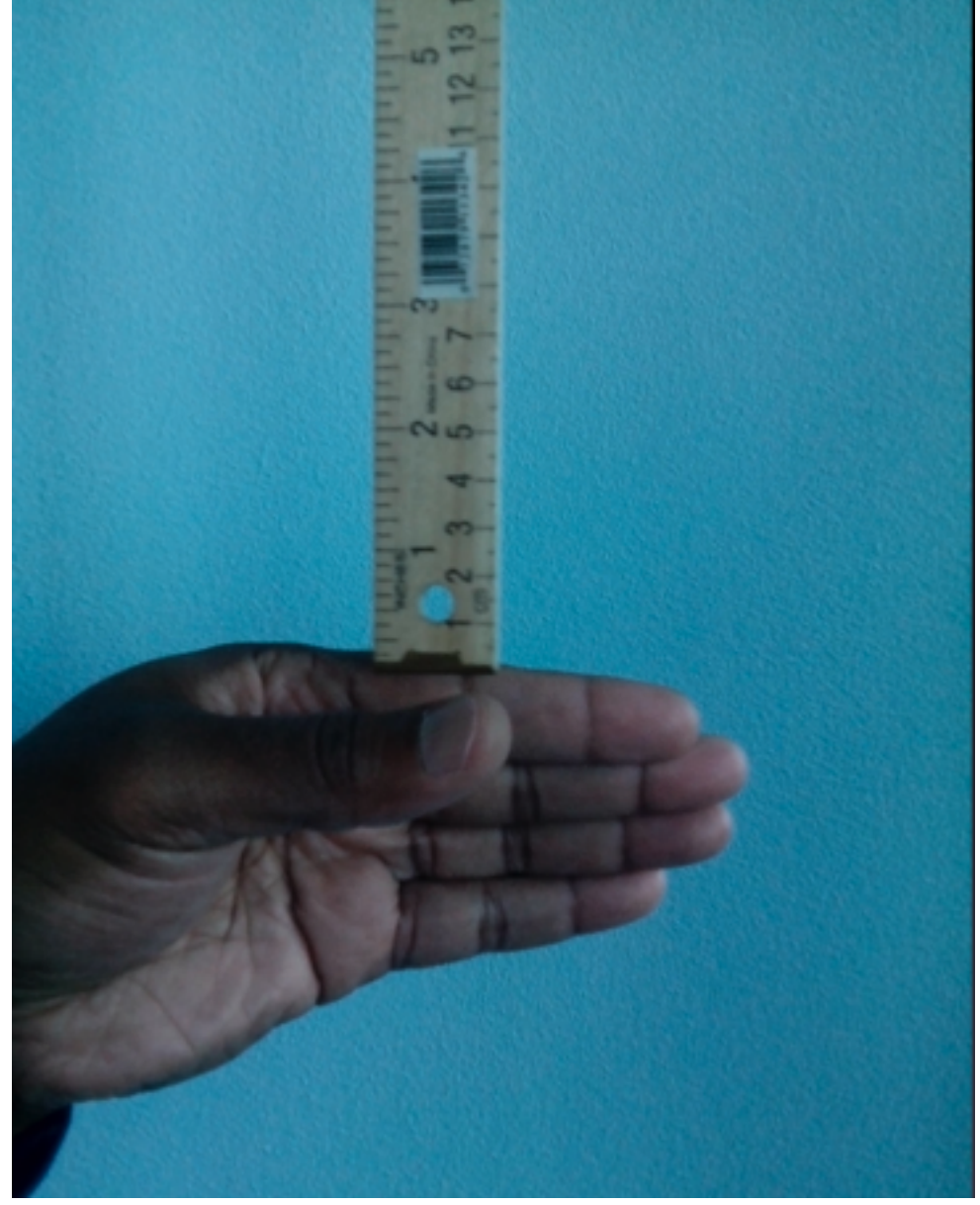
Instructions:

Pick one group member to be "Student A" and one group member to be "Student B".

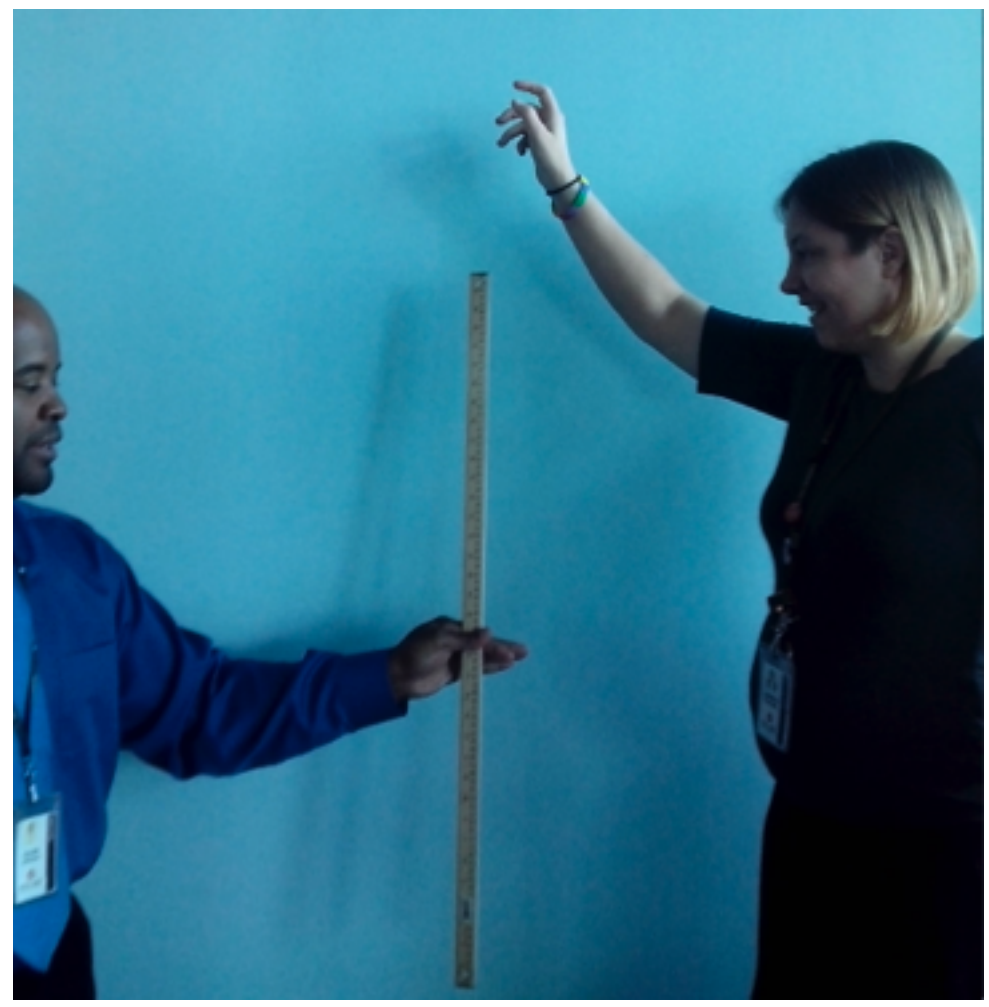
- Student A will stand on a table or chair and hold the yardstick from the top so that it is up and down with the bottom several feet above the floor.



- Student B, standing on the ground, holds his/her fingers opposite the 0-cm mark, but doesn’t touch the stick!



- Without warning, the Student A should let go of the yardstick, and Student B tries to catch it with his/her fingers.



What centimeter mark are Student B's fingers on when he/she caught the stick? Please enter below using the following format:

Ben - Trial #1 = 5 cm

4pts

0 / 4

3 Repeat this process four more times and enter the results below in the following format:

Trial #2 = 5 cm

Trial #3 = 3.5 cm

Trial #4 = 8 cm

Trial #5 = 7.5 cm

16pts

0 / 16

4 What was the average (in cm) for Trials #1-5?

5pts

0 / 5

5 *There are 100 centimeters in a meter.* Convert your answer in #4 from centimeters to meters by dividing your answer by 100 and type it below.

5pts

0 / 5

6 Gravity is pulling down the yardstick at a constant rate of 9.8 m/s every second. The longer it falls, the faster it goes. By measuring how far the yardstick falls, we can calculate the speed at which it is moving and the time that it took Student B to catch it.

Since gravity is pulling the yardstick down, we can use the Distance in Free Fall equation to calculate how much time it took for Student B to catch the yardstick – **the reaction time!**

$$t = \sqrt{\frac{2d}{g}}$$

What is Student B's reaction time (in seconds)? Please round to the nearest hundredth.

15pts

0 / 15

7 Complete the same experiment for each other member of your group, and document the following information in the box below. Please round all answers to the nearest hundredth.

Name	Trial #1	Trial #2	Trial #3	Trial #4	Trial #5	Average	Convert to meters	Reaction Time

Please use the following format:

John - 5 cm, 8 cm, 3 cm, 2 cm, 1 cm - Average = 3.8 cm, Converted = .038 m - Time = .088 s

Jim - 8 cm, 12 cm, 20 cm, 10 cm, 8 cm - Average = 11.6 cm, Converted = .116 m - Time = .154 s

40pts

0 / 40

8 Which member of your group had the fastest reaction time and what is the time?

0pts

0 / 0

9 Use the equation below and the fastest member's reaction time to calculate how fast (*final velocity*) the yardstick was moving the moment before it was caught.

$$a = \frac{v_f - v_i}{t}$$

How fast was the yardstick moving (in m/s)? Please round to the nearest hundredth.

15pts

0 / 15

The due date has passed and this activity does not allow late submissions.

Comments

Debra Walker Did this as a group project. Valerie submitted our group's assignment.

Donald Johnson You have earned a grade of 100.