MEASURING YOUR REACTION TIME

Objective

1. Calculate your reaction time and compare to the reaction time of the class.
2. Compare the reaction time of males and females in the class.
3. Compare the reaction time in terms of age for the class.

Equipment

1. Meter stick

Theory

If an object is released from rest it can be proven (we will prove it in lecture) that the distance it fall is given by the equation:

$$y = (1/2)gt^2$$

In this equation:

$g = 9.80$ m/s^2 (the acceleration of the meter stick which is constant for all objects near the earth's surface)

t = Time of fall of the meter stick (time from when the meter stick is release to when it is caught). This is your reaction time.

Procedure

1. Have your lab partner, whose reaction time is being measured, place his/her forearm on the lab bench with the fingers overhanging the edge. This is to prevent your partner from moving their arm downwards, chasing after the falling ruler.
2. Suspend the ruler between your partner's thumb and finger, held about 1 cm apart. Drop the ruler without warning while the first partner attempts to catch it.
3. Record the distance the ruler fell.
4. Repeat 10 times.
5. Calculate your reaction time for each run and then calculate your average reaction time.
6. Change places with your partner and repeat steps 1 – 5.

Analysis

1. Who has the fastest reaction time, males or females?
2. Does age play a role in calculating reaction time?
3. Who has the fastest reaction time in the class?
4. Did you reaction time improve with practice?
5. Measure the length of a dollar bill. Using your average reaction time predict if you can catch the dollar bill if it is released from rest between your fingers. After writing down your prediction, try catching the dollar bill as see if it agrees with your prediction.
6. What were some sources of error?

- Most human reaction times will fall between 0.1 and 0.2 seconds.
- Driver reaction time is greater than this time because they take into account:
    i. Time required to perceive the problem
    ii. Time required to move your foot to the brake pedal
    iii. Time to apply the brakes