Activity 1 – Calculating your reaction-time

How fast are your reflexes? How do you compare with others in the room?

Procedure: Have one group member hold a ruler (or meter stick) up in the air. The person who is catching the ruler will place their thumb and finger(s) around the ruler without grabbing it. The ruler should start at a known distance. This value could be recorded. The ruler will then be dropped with no warning and the person catching the ruler will try to catch it without moving their arm. The distance will be recorded. Repeat this trial 5 times in total.

Trial	Distance (m)
1	
2	
3	
4	
5	
Average	

What else can you use to find your reaction time?

Fill in these 4 variables to help you calculate it:

V_i = _____ d = _____ t = _____ a_{av} = _____

Knowing that you are trying to find Δt, use what you know about the uniform acceleration equations to calculate your reaction time.

Reaction Time ($\Delta t_{focused}$) = _____

The average reaction time is 0.284 seconds (https://www.humanbenchmark.com/tests/reactiontime/statistics). How do you compare with the average? Try the link to see if you get the same value as your calculated time above.

Difference in reaction time: your time – 0.284 seconds = _____

$\frac{Difference\ in\ reaction\ time}{0.284}$ x 100% = _____ faster/slower than the average.

Note: If your reaction time is below the average, you are faster than the average. If your time is above the average, you are slower than the average.

Activity 2 – Distractions while Driving

Are you distracted while driving?

Using a smart-phone, or computer, repeat Activity 1 with an added element. This time, the person catching the meter stick will be texting, playing a game, or watching a video while the ruler is being dropped.

Repeat this trial 4 more times (5 times in total) and calculate your distance (in meters). Using the same method from activity 1, find your reaction time ($\Delta t_{distracted}$) while being distracted.

Trial	Distance (m)
1	
2	
3	
4	
5	
Average	

Distracted Reaction time ($\Delta t_{distracted}$) = _____

To find how much percent increase (or decrease) your $\Delta t_{distracted}$ was:

$\Delta t_{distracted}$ - $\Delta t_{focused}$ = _____ (reaction time difference)

$\frac{reaction\ time\ difference}{\Delta t_{focused}}$ x 100% = _____ (percent increase, if negative it is a percent decrease)

Looking at some of the facts below, how do you compare?

If traveling 110km/h on the highway it would take a person with a reaction time of 0.9 seconds 28 meters (about 92 feet) to stop in order to avoid a collision.

- At the same speed, a reaction time of 0.7 seconds would need 21 meters (70 feet) while 0.4 seconds would need 12.5 meters (41 feet)