

ACTIVITY NO. - 1 - Know your Reaction Time

Subject	Physics
Class	XI
Chapter/Unit	Motion in a Straight Line
Topic	Reaction Time
Time	10 minutes
Nature of Activity	Pair Work

What will I learn(Learning Outcome)?

To experimentally calculate their reaction time.

Skills: Applying, Analyzing and Creating

What I have to do?

To calculate the reaction time of an individual with the help of a freely falling body.

What do I require?

Ruler (range up to 15 cm or more)

What do I need to know?

When a situation demands our immediate action, it takes some time before we really respond. Reaction time is the time a person takes to observe, think and act. For example, if a person is driving and suddenly a boy appears on the road, then the time elapsed before he slams the brakes of the car is the reaction time.

➤ **Teacher's Activity**

Teacher will

1. ask students to recall the motion of a freely falling body having constant acceleration due to gravity equal to the value 9.8 ms^{-2}
2. make pairs of the students and will explain the steps of the activity.
3. ensure that each participant of the pair performs the activity on his/her own.

How will I proceed?

➤ **Student's Activity**

1. Take a ruler and ask your friend to drop it vertically through the gap between your thumb and forefinger.
2. After you catch it, find the distance d travelled by the ruler by reading the graduation on the scale.
3. Calculate the reaction time using three equations of motion.
4. Repeat the procedure by swapping the role and responsibility. (i.e. you drop the ruler and your partner will catch it)

What have I observed?

S. No.	Student's Name	Distance Travelled (cm)	Reaction Time (s)
1			
2			

What have I learnt?

Reaction time depends on complexity of the situation and on an individual and it can be calculated using _____ body.

What am I curious to learn?

- Let us try to prove Galileo's law of odd numbers i.e. "The distances traversed, during equal intervals of time, by a body falling from rest, stand to one another in the same ratio as the odd numbers beginning with unity [namely, 1: 3: 5: 7.....]."

Let me evaluate myself

1. What is meant by reaction time?

2. What is meant by free fall?

3. Plot v-t and x-t graph depicting the motion of a freely falling body.

4. Derive an expression for the final velocity of a freely falling body.

5. A ball is thrown from a cliff 25 meter high calculate the time it takes to hit the ground and also its final speed.
