

## Obtaining Motion Graphs

### Materials:

- Motion detector
- Graphing calculator

### Procedure:

Place the motion detector in a stable and fixed position.

Connect the motion detector to the graphing calculator using the appropriate connection cable.

Position an object at a suitable distance in front of the motion detector (e.g., a ball).

Start data collection on the graphing calculator by activating the motion measurement mode.

Move the object slowly towards and/or away from the motion detector, ensuring that the movement is not too abrupt.

Observe the graph on the graphing calculator as the object moves. This graph represents the variation in the object's distance over time.

Repeat the procedure by varying the speed or movement of the object to obtain different graphs.

### **Explanation:**

The motion detector emits ultrasonic waves that are reflected by the moving object. The graphing calculator records the distance between the detector and the object over time, allowing the observation of graphs that represent the motion's trajectory.