



## Laboratory Activity

# Motion of a Bowling Ball

It takes time to walk somewhere. Sometimes you move quickly, while other times you move slowly. Other objects might show variation in their movement as well. In this lab, you will graph the movement of a bowling ball and consider how its motion relates to other kinds of motion.

### Strategy

You will make a distance versus time graph of a bowling ball as it rolls. You will relate the motion of the bowling ball to other types of motion.

### Materials

bowling ball  
stopwatches (5–10)  
large pillow

### Procedure

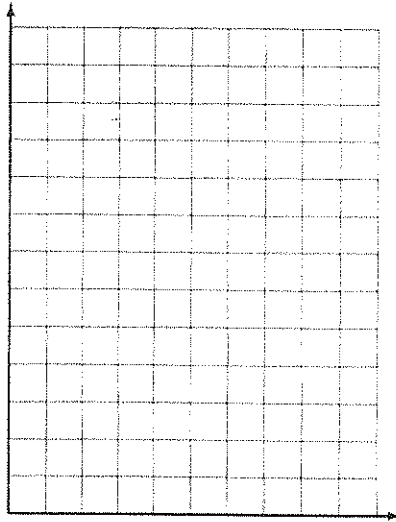
1. Line up with other students at equally spaced distances of 1 m. Your teacher will mark the distances.
2. At the far end of the hall, set up the pillow or other large, soft object. This will prevent the ball from rolling too far.
3. Start your stopwatch when your teacher rolls the ball slowly.
4. When the ball passes you, stop your stopwatch. As the ball passes the other students, they will do the same.
5. Record all of your times in Table 1.
6. Clear your stopwatch to prepare for another trial. This time, your teacher will roll the ball faster.
7. Record your times in Table 2.
8. Graph the data for both tables, putting the data from Table 1 into Graph 1, and the data from Table 2 into Graph 2. Place the distance on the vertical axis, and the time on the horizontal axis.

Trial 1	
Distance	Time
0 m	
1 m	
2 m	
3 m	
4 m	
5 m	

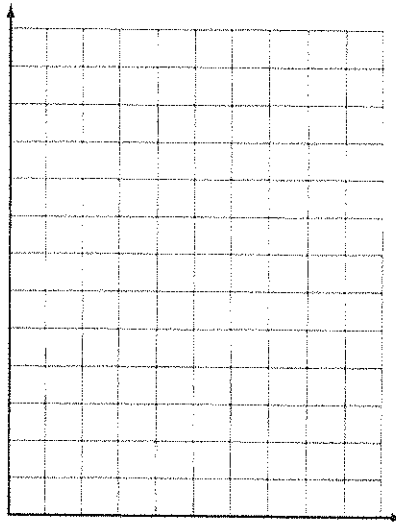
Trial 2	
Distance	Time
0 m	
1 m	
2 m	
3 m	
4 m	
5 m	

**Laboratory Activity 1 (continued)**

Graph 1



Graph 2

**Questions and Conclusions**

1. What do you notice about the graphs of the two trials?

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2. On a distance versus time graph, what does the slope of the line tell you?

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3. On a distance versus time graph, what does a flat (horizontal) line mean?

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4. Imagine a bowling ball dropped from a great height. How would the motion of this bowling ball relate to the bowling balls in the lab?

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5. What was the speed of the bowling ball in the first trial? In the second trial?

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6. What distance did the bowling balls travel? What is their displacement?

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7. How are distance and displacement related?

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