

Pace Tracer 2 Velocity Versus Time Lab

Getting Ready

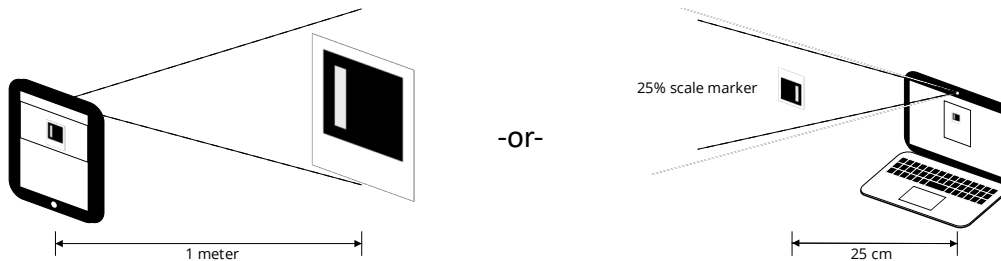
Navigate to the **Pace Tracer 2** Interactive at The Physics Classroom website:
<https://www.physicsclassroom.com/Physics-Interactives/1-D-Kinematics/Pace-Tracer-2>

Navigational Path:

www.physicsclassroom.com ==> Physics Interactives ==> 1D Kinematics ==> Pace Tracer 2

Print a marker and tape it to a wall or door. Point your phone or tablet at the marker and walk. The device camera detects the marker and determines your velocity. Alternatively, you can print the quarter-size marker (25% scale) and hold it as you move in front of a computer.

Tap the screen to start. Grant the page access to your camera to detect your motion.
 Using a phone or tablet: stand 1 meter from the marker and tap on **Calibrate**.
 Using a computer: stand 25 cm from the monitor and click on **Calibrate**.



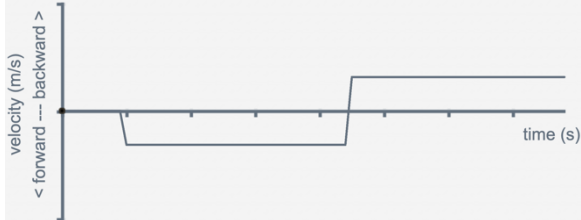
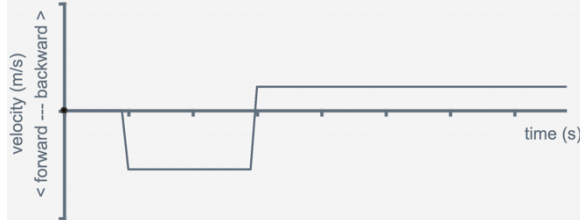
Select a graph and begin. Tap **Go** and start moving to match the v-t graph. The percentage of the target graph that you match is displayed. A 60% match earns you the **Trophy**. Tap **Reset** to try again. Use the small menu in the bottom left of the camera view to return to the Graph menu.

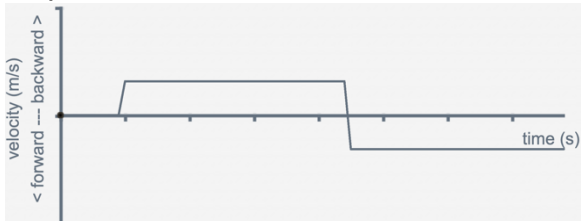
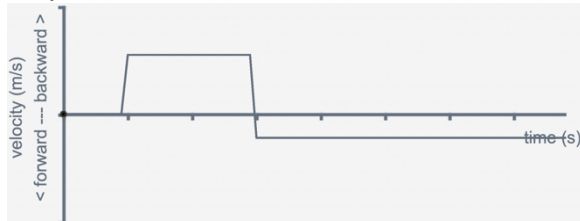
Post-Lab Analysis

Describe each section of each graph with the following terms:

“walking backward” / “stopped” / “walking forward”
 “slowing down” / “at a constant speed” / “speeding up”

<p>Graph 1</p> <p>0 - 1 s: stopped</p> <p>1 - 5 s: _____</p> <p>_____</p> <p>5 - 8 s: _____</p> <p>_____</p>	<p>Graph 2</p> <p>0 - 1 s: stopped</p> <p>1 - 5 s: _____</p> <p>_____</p> <p>5 - 8 s: _____</p> <p>_____</p>
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<p>Graph 3</p>  <p>0 - 1 s: _____</p> <p>1 - 4.5 s: _____</p> <p>4.5 - 8 s: _____</p>	<p>Graph 4</p>  <p>0 - 1 s: _____</p> <p>1 - 3 s: _____</p> <p>3 - 8 s: _____</p>
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<p>Graph 5</p>  <p>0 - 1 s: _____</p> <p>1 - 4.5 s: _____</p> <p>4.5 - 8 s: _____</p>	<p>Graph 6</p>  <p>0 - 1 s: _____</p> <p>1 - 3 s: _____</p> <p>3 - 8 s: _____</p>
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6. What is different between Graph 3 and Graph 4?

7. In Graph 4, what is different between 1 – 3 seconds and between 3 – 8 seconds?

8. What is different between Graph 3 and Graph 5?

Graph 7

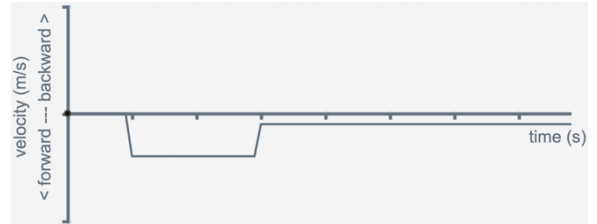


0 - 1 s: _____

1 - 6 s: _____

6 - 8 s: _____

Graph 8



0 - 1 s: _____

1 - 3 s: _____

3 - 8 s: _____

Graph 9



0 - 1 s: _____

1 - 6 s: _____

6 - 8 s: _____

Graph 10



0 - 1 s: _____

1 - 3 s: _____

3 - 8 s: _____

9. What is different between Graph 7 and Graph 8?

10. In Graph 8, what is different between 1 – 3 seconds and between 3 – 8 seconds?

11. What is different between Graph 7 and Graph 9?

<p>Graph 11</p> <p>0 - 1 s: _____</p> <p>1 - 5 s: _____</p> <p>_____</p> <p>5 - 8 s: _____</p> <p>_____</p>	<p>Graph 12</p> <p>0 - 1 s: _____</p> <p>1 - 5 s: _____</p> <p>_____</p> <p>5 - 8 s: _____</p> <p>_____</p>
<p>Graph 13</p> <p>0 - 1 s: _____</p> <p>1 - 5 s: _____</p> <p>_____</p> <p>5 - 8 s: _____</p> <p>_____</p>	<p>Graph 14</p> <p>0 - 1 s: _____</p> <p>1 - 5 s: _____</p> <p>_____</p> <p>5 - 8 s: _____</p> <p>_____</p>

12. In Graphs 11 and 13 you start at rest and gradually speed up. What do you need to do differently in Graphs 12 and 14?

13. What do you notice is different in the shapes of the graphs in Graphs 11 – 14 compared to all of the previous graphs? What does this difference indicate for the motion? Be thorough.