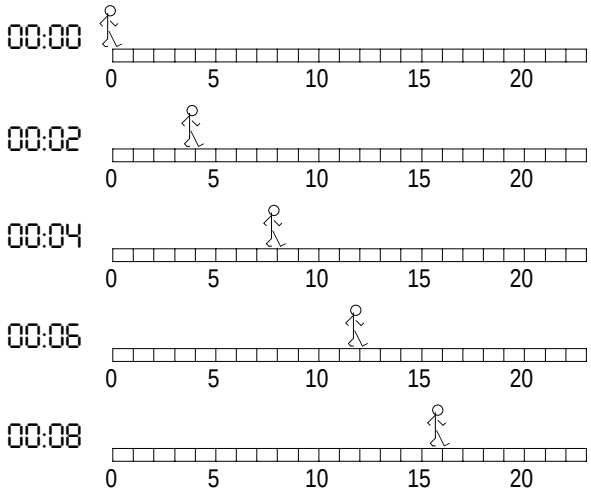
# PhyzJob: Graphing Little Dudes II

**VELOCITY VS. CLOCK READING IN UNIFORM MOTION**

Suppose something is moving. If we collect corresponding clock reading and position measurements, these numbers form ordered pairs that can easily be plotted on a position vs. clock reading graph. We can also determine the velocity of the object within the given time intervals. Armed with velocity values, we can plot velocity vs. clock reading graphs. Consider the various little dudes shown below. They exist and move along a sidewalk marked in 1 meter increments. We are given snapshots of them at regular time intervals. Follow the instructions given below to construct velocity vs. clock reading graphs.

1. Complete the *t* and *x* sections of the data table based on the diagrams of Walking Dude below.




| Clock R. t (s) | Position x (m) | Velocity v (m/s) | CR Mid t (s) |
|---|---|---|---|
| | | DON'T COMPLETE THESE UNTIL INSTRUCTED TO DO SO | |
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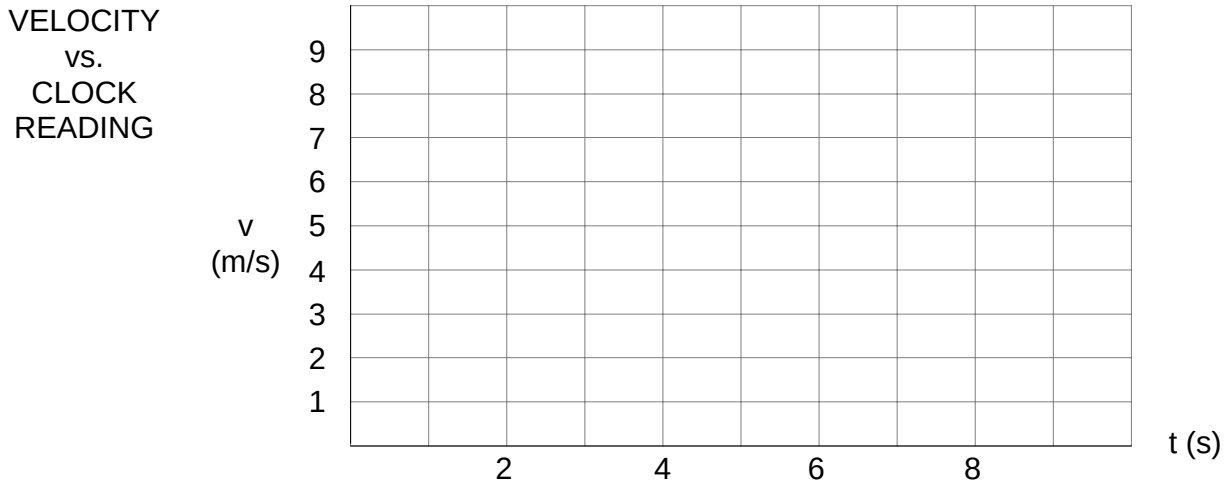
2. Determine the average velocity of Walking Dude between clock readings 0s and 2s by dividing the distance traveled in the interval by the duration of the interval. Record this value on the data table. Calculate average velocities for all remaining intervals. Show the first calculation in the space below.

3. Velocity values are averages across 2s time intervals. Complete the Clock Reading Midpoint column. For example, the clock reading midpoint between 4s and 6s is 5s.

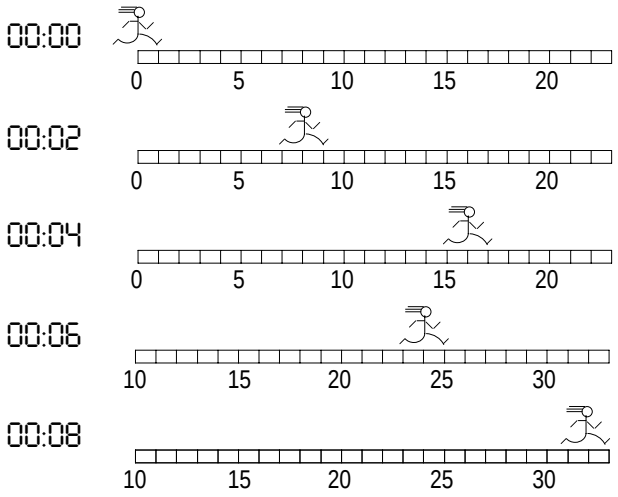
4. Plot velocity vs. clock reading values from the table.




5. What assumptions about Walking Dude would we have to make if we wanted to connect the dots on the graph to form a straight, continuous line?

6. Make those assumptions and draw the line of the graph. Label the line, “Walking Dude.”

7. On the axes on the front, plot velocity vs. clock reading for the two other little dudes shown below.




| Clock R. t (s) | Position x (m) | Velocity v (m/s) | CR Mid t (s) |
|---|---|---|---|
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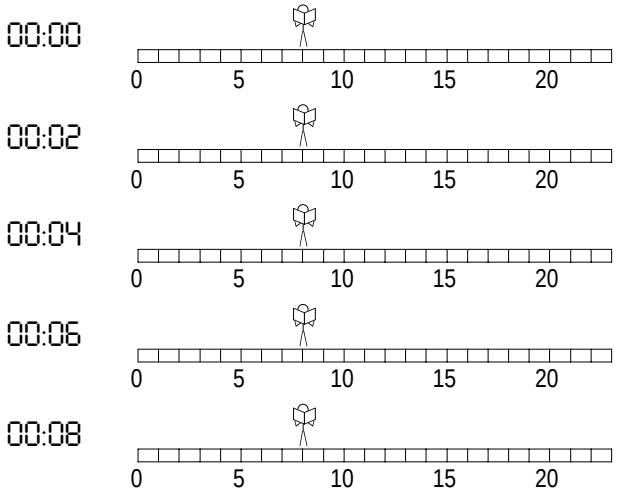


| Clock R. t (s) | Position x (m) | Velocity v (m/s) | CR Mid t (s) |
|---|---|---|---|
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8. Recall Walking Dude II from the previous Little Dudes PhyzJob? (If not, go back and look him up.) Plot his velocity vs. clock reading graph on the axes above.

9. Notice all our velocity vs. clock reading plots yield horizontal lines. What does a horizontal velocity vs. clock reading line tell you about the motion of the object?

10. What would a non-horizontal (e.g. “diagonal”) line on a velocity vs. clock reading graph mean
a. if it had positive slope?

b. if it had negative slope?

11. What would a vertical line on a velocity vs. clock reading graph mean?