

PHYZ SPRINGBOARD: FROM VELOCITY TO POSITION I

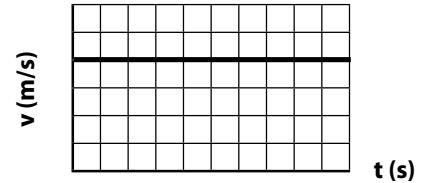


ALGEBRAIC EXPRESSIONS FOR UNIFORM MOTION

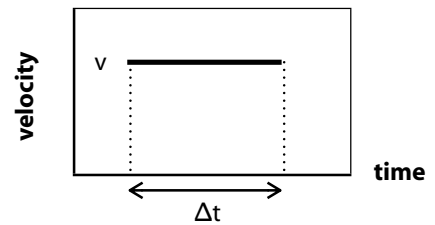
1. If a body travels at a speed of 4 m/s for 10 s, how far will it go?
2. If a body travels at a speed of v for an interval Δt , how far (Δx) will it go?

GRAPHICAL INTERPRETATION OF UNIFORM MOTION

3. Examine the velocity vs. clock reading graph of a body that travels at 4 m/s for 10 s. Is there any characteristic of the graph that indicates the **distance** traveled by the body? If so, what is it?



4. Examine the velocity vs. clock reading graph of a body that travels at a speed v for an interval Δt . Write an expression for the distance (Δx) traveled by the body.



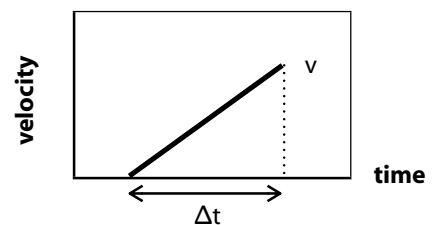
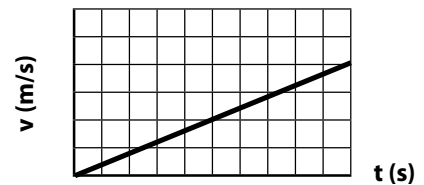
MOTION TYPING

5. a. What kind of motion did the bodies whose velocity vs. clock reading graphs are shown above undergo?
- b. What kind of motion did the body whose velocity vs. clock reading graph is shown to the right undergo?

GRAPHICAL INTERPRETATION OF UNIFORM ACCELERATED MOTION

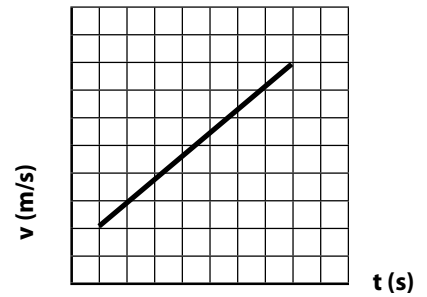
6. The mathematical principle deduced above for determining the distance traveled by a body from a velocity vs. clock reading graph is true for all types of motion.

7. a. How far did the body whose velocity vs. clock reading graph is shown in the previous question travel?
- b. Write a general expression for the distance traveled by a body that accelerates from rest to a velocity v in an interval Δt .



7. a. Consider a body that accelerates from 2 m/s to 8 m/s in 7 s. How far did it travel during that 7 s interval?

b. Write a general expression for the distance traveled by a body that accelerates from an initial velocity v_0 to a final velocity v in an interval Δt .

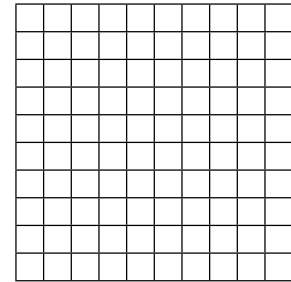


GOING NEGATIVE

8. Consider a body that travels at -3 m/s for 4 s.

a. Plot the body's velocity vs. clock reading graph to the right. (The grid is provided for your convenience; **you** choose the axes.)

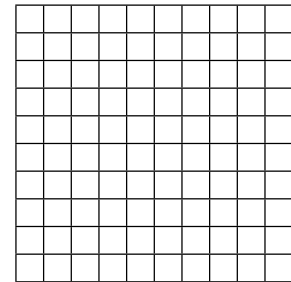
b. How far did the body move during the interval?



9. Consider a body that accelerates from rest to -5 m/s in 8 s.

a. Plot the body's velocity vs. clock reading graph.

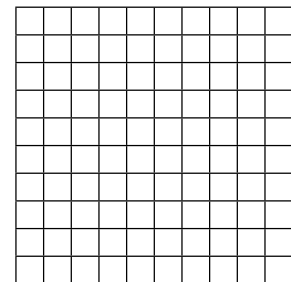
b. How far did the body move during the interval?



10. Consider a body that accelerates from -2 m/s to -8 m/s in 5 s.

a. Plot the body's velocity vs. clock reading graph.

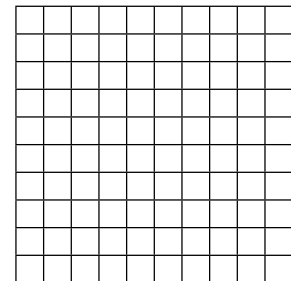
b. How far did the body move during the interval?



11. Consider a body that accelerates from 4 m/s to -4 m/s in 10 s.

a. Plot the body's velocity vs. clock reading graph.

b. How far did the body move during the interval?



c. Did the body move during the interval? If so, how? Describe qualitatively.