

Linear Motion Practice

1. A person swims 4 complete laps in a 30 m long pool. (30 m is one way. 1 complete lap is there and back.)
 - A. What distance did they travel?
 - B. What is their total displacement?

For each of the following situations give detailed descriptions including horizontal/vertical (x or y) and +/-.

2. A ball is thrown into the air. As it is going up
 - A. Displacement is:
 - B. Velocity is:
 - C. Acceleration is:
3. A ball is rolling to the right and slowing down.
 - A. Displacement is:
 - B. Velocity is:
 - C. Acceleration is:
4. An object stops after moving 12 m/s to the right.
 - A. What is its initial velocity?
 - B. What is its final velocity?
 - C. Is its acceleration positive or negative?
 - D. Is its displacement positive or negative?
5. An object moves 50 m to the left after starting at rest. If it ends up going 12 m/s to the left, for how long did it accelerate?

Variables: What's Variable is not used? Solve:

What equation will you use?

6. An object is moving 6 m/s to the right. Then it accelerates at $+3 \text{ m/s}^2$ for 4 seconds. What is its displacement?

Variables: What's Variable is not used? Solve:

What equation will you use?

7. An object at rest begins to accelerate to the left. It travels 112 m to the left in 14 seconds. What is the final velocity of the object?

Variables: What's Variable is not used? Solve:

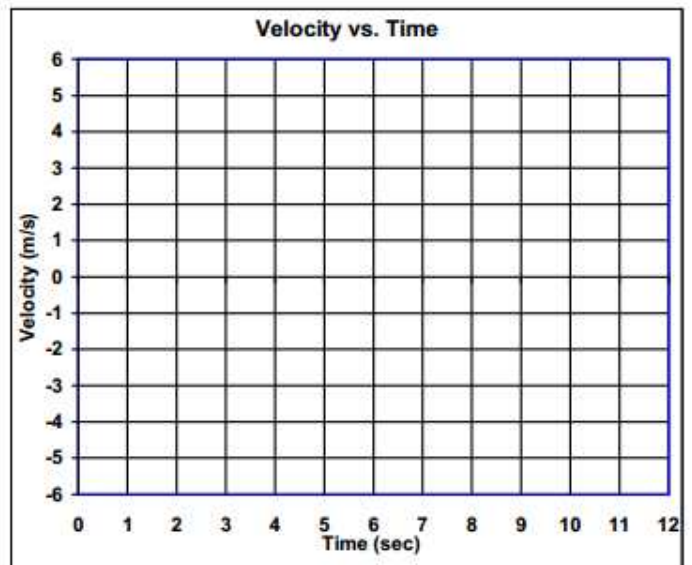
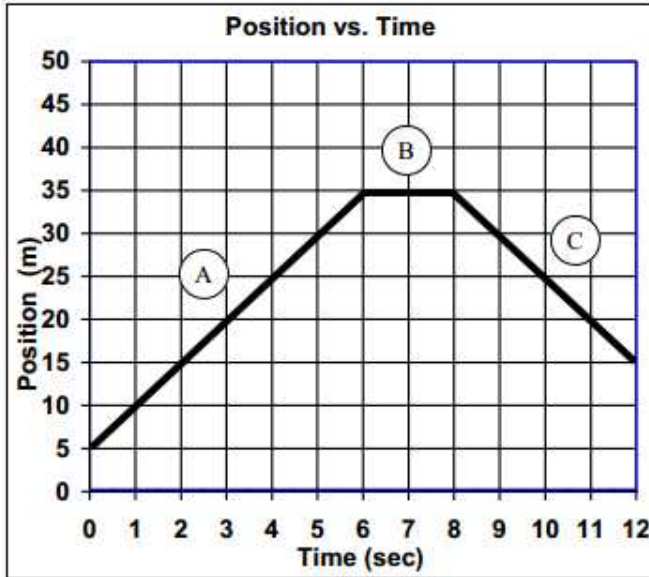
What equation will you use?

From the "Freefall" notes:

8. When an object is dropped or thrown, what is its acceleration?
9. An object is dropped from 18 m in the air.
 - A. What is its initial velocity?
 - B. What is its displacement?
10. An object is thrown into the air. You want to know how high up it goes.
 - A. Is its displacement going to be + or -?
 - B. What will be its final velocity?

Also from the "Freefall" notes:

11. A ball is thrown from the ground going 12 m/s. It lands back on the ground.
- A. What is the acceleration of the ball during its flight?
 - B. Since it comes back to the ground, what is Δy ?
 - C. What will be its final velocity just before it hits the ground?



Use the graphs to answer the following:

12. A. What is the velocity of line A above?
(Hint: slope)
- B. What is the velocity of line B above?
- C. What is the velocity of line C above?
- D. Graph these three velocities on the velocity graph above.
- E. Figure out the acceleration of each of the lines on the velocity graph.
- F. Transfer these three lines to the acceleration graph.

