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(2.02) - Constant Velocity Worksheet

*Use the four graphs shown below to answer questions #1 - 4.*

| A | B | C | D |
|---|---|---|---|
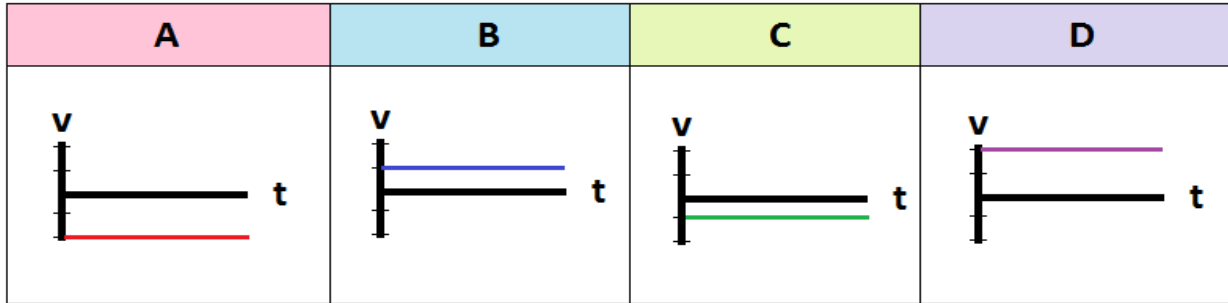


1. Which graphs show an object moving in the positive direction?
2. Which graphs show an object moving in the negative direction?
3. Which graphs show an object moving slowly?
4. Which graphs show an object moving quickly?

5. An object moves according to the Position vs. Time graph below. Five segments A-E are labeled. Use the graph below to answer the following questions.
    a. During which segment(s) is the car not moving?
    b. During which segment(s) is the car moving in the positive direction?
    c. During which segment(s) is the car moving in the negative direction?
    d. During which segment is the car moving *fastest*?
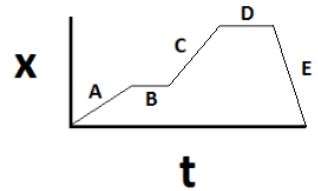


6. A constant velocity lab cart moves according to the data table shown below. Use the table to answer the following questions:
    a. Create a Position vs. Time graph for the lab cart
    b. Write a mathematical model that describes the cart's position as a function of time
    c. How long would it take the cart to reach a position of 16m?

| Position (m) | Time (s) |
|---|---|
| 100 | 0 |
| 92 | 2 |
| 84 | 4 |
| 76 | 6 |
| 68 | 8 |

*A jogger's motion is plotted on the Position vs. Time graph shown below.*



**X**(m)

4
3
2
1

1 2 3 4 5

**t**(s)
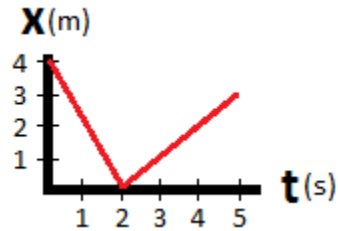
7. A jogger's motion is plotted on the position vs. time graph shown above.
   a. Create a quantitative (with numbers) Velocity vs. Time graph for the jogger

   b. Use the Velocity vs. Time graph (from question #5) to solve for the jogger's displacement

**Challenging:**

8. A blue car is traveling with a speed of 14 m/s and is 300 meters ahead of a red car traveling in the same direction at 20 m/s.
   a. Graph the motions of both cars on the same Position vs. Time graph
   b. How long will it take the red car to catch up to the blue car?

9. In a demolition derby, a green car and purple car start 900 m apart. When the derby begins, the green car moves 8 m/s East, while the purple car moves 12 m/s West.
   a. Graph the motions of both cars on the same Position vs. Time graph
   b. How long will it take for the two cars to collide?