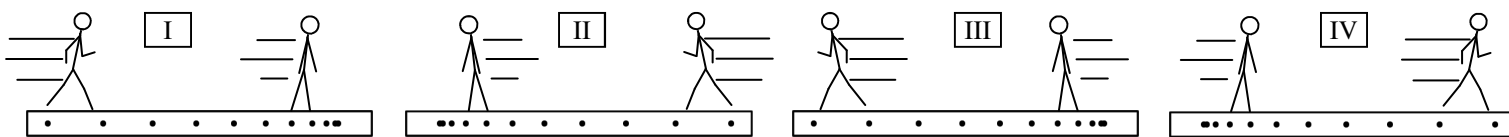


PreAP Linear Motion 6

Remember * means answer on back.

- Learning about units. An object begins at rest. It accelerates at 4 m/s^2 . This means it gains 4 m/s every second.
 - * How fast is it going to begin with?
 - * After 1 seconds?
 - * After 2 seconds?
 - After 4 seconds.
- An object is originally moving 2 m/s . Then it accelerates for 6 seconds at 5 m/s^2 .
 - * Since it is accelerating 5 m/s every second, how fast will it be moving after 1 second?
 - How fast will it be moving after 2 seconds?
 - * How much speed will it gain in 6 seconds of acceleration?
 - How fast will it be moving after 6 seconds of acceleration?

Meet Slim Jim, he's very Slim. Slim Jim is going to help us learn Physics this year.

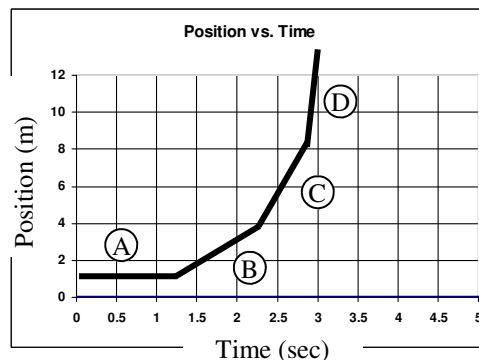


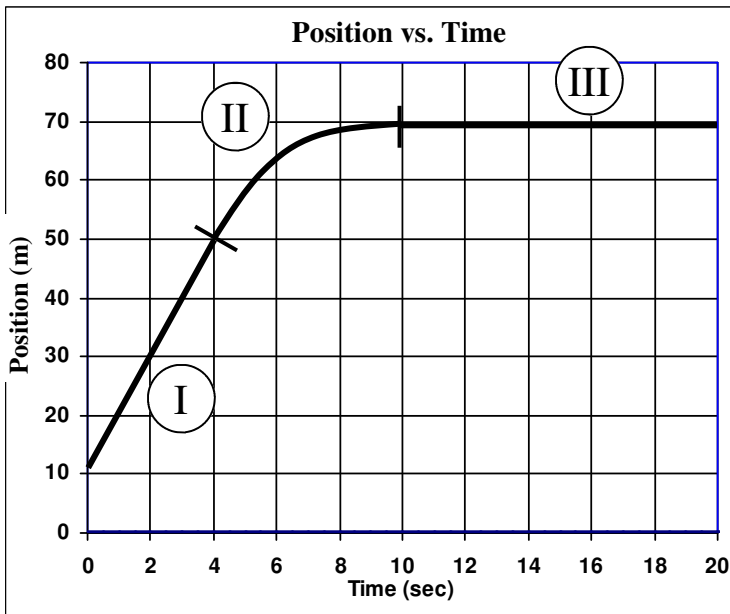
- Slim Jim is going to help us understand positive and negative acceleration. Thanks, Jim!
(Assume right is +, just like in math.)
 - * In which diagram is Jim speeding up in the + direction? (This is a positive acceleration.)
 - * In which other diagram do the dots also show a + acceleration (dots look the same)?
 - * What is Jim doing in this other diagram?
 - In which diagram is Jim speeding up in the - direction? (This is a negative acceleration.)
 - In which other diagram do the dots also show a - acceleration?
 - What is Jim going in this other diagram?
 - Write +a or -a under each label (under the I, II, etc) on each diagram.

Now, using what you just learned...

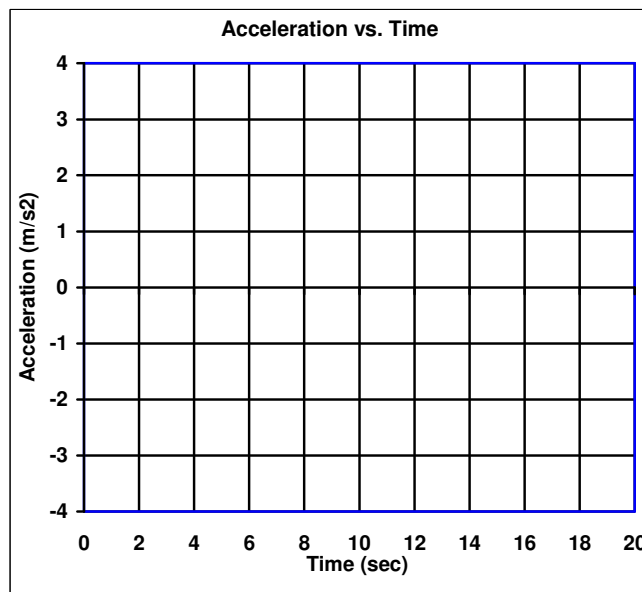
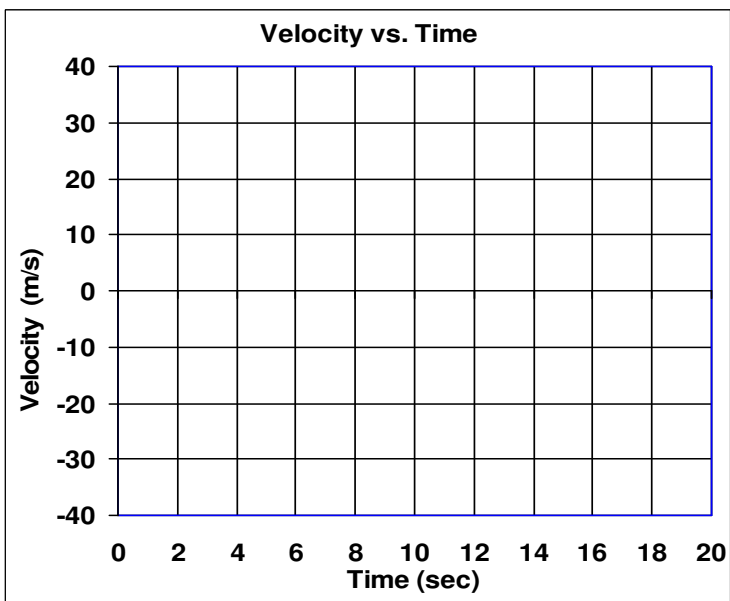
- + or - acceleration?
 - ___ An object is speeding up to the left.
 - ___ An object is moving to the right and slowing down.
 - ___ An object is moving right and speeding up.
 - ___ An object is moving left and slowing down.
- Use the position vs time graph at the right to answer the following.
 - Which segment has the fastest velocity?
 - Which segment shows the object at rest?
 - Give the letters from slowest to fastest:
 - What is the object doing (use the information from the above answers)?

(Next page)





- OK—let walk you thru the next level. Follow EXACTLY.
6. You already know how to do line segments I and III.
 - A. *Calculate the slope from 0 to 4 seconds.
 - B. Graph this on the velocity graph (0 to 4 seconds only).
 - C. Calculate the slope from 10 to 20 seconds.
 - D. Graph this on the velocity graph (10 to 20 sec only).
 - E. ON THE VELOCITY GRAPH connect line segments I and III with a straight line from 4 to 10 seconds.
 - F. Transfer the velocity graph to the acceleration graph.



- | | | |
|--|-----------------------------|-----------------------------------|
| 1A) 0m/s | 1B) $0 + 4 = 4 \text{ m/s}$ | 1C) $0 + 4 + 4 = 8 \text{ m/s}$ |
| 2A) $2 + 5 = 7 \text{ m/s}$ | 2C) $6(5) = 20 \text{ m/s}$ | |
| 3A) IV | 3B) II | 3C) slowing down in neg direction |
| 6A) $(50-10)/(10-0) = 40/4 = 10 \text{ m/s}$ | | |