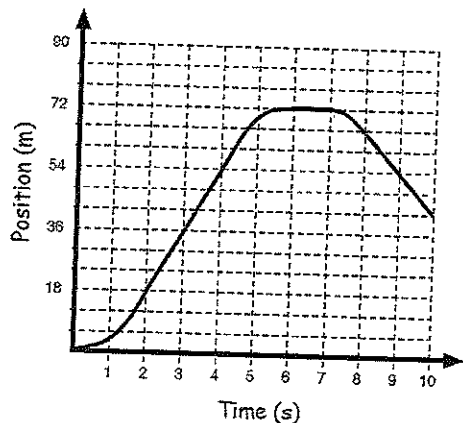


### Homework Problems: Motion Graphs

1. An object's motion is described by the following graph of position vs. time:



- a. What is the object doing between 2 s and 4 s? What is its velocity during that interval?

Constant  
+ velocity

- b. What is the object doing between 6 s and 7 s? What is its velocity during that interval?

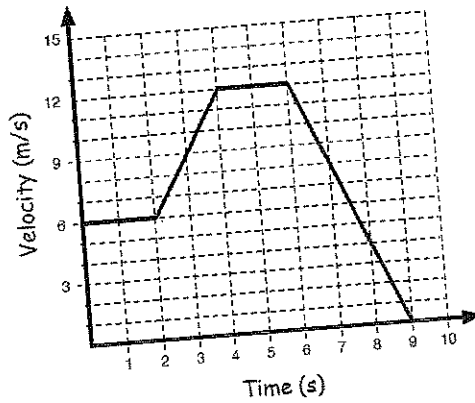
No change of Position  
No movement

- c. What is the object doing between 8 s and 10 s? What is its velocity during that interval?

Traveling left  
←  
at constant velocity

Use this space for summary and/or additional notes.

2. An object's motion is described by the following graph of velocity vs. time:



a. What is the object doing between 0 s and 2 s? What are its velocity and acceleration during that interval?

b. What is the object doing between 2 s and 4 s? What is its acceleration during that interval?

+v  
+a      speed up

c. What is the object doing between 6 s and 9 s? What is its acceleration during that interval?

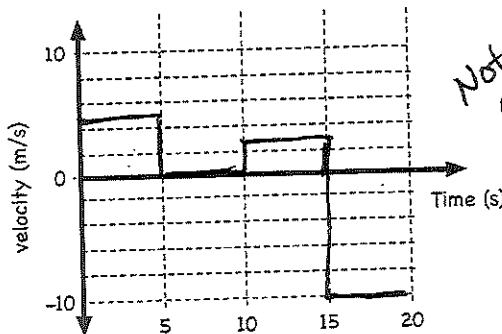
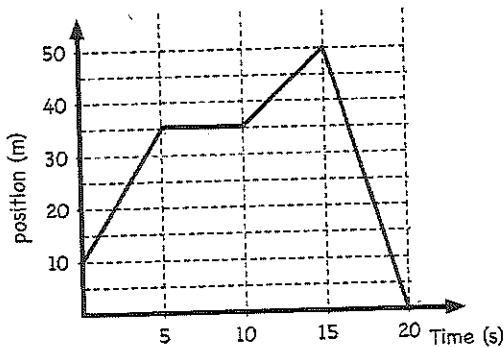
-a  
+v      slow down

Use this space for summary and/or additional notes.

# Linear Acceleration

Add Important Notes/Cues Here

3. The graph on the left below shows the position of an object vs. time. Sketch a graph of velocity vs. time for the same object on a graph similar to the one on the right.



Notice are under the arrow -10

$$v = \frac{\Delta p}{\Delta t}$$

$$= \frac{35-10}{5}$$

$$= \frac{25}{5} = 5$$

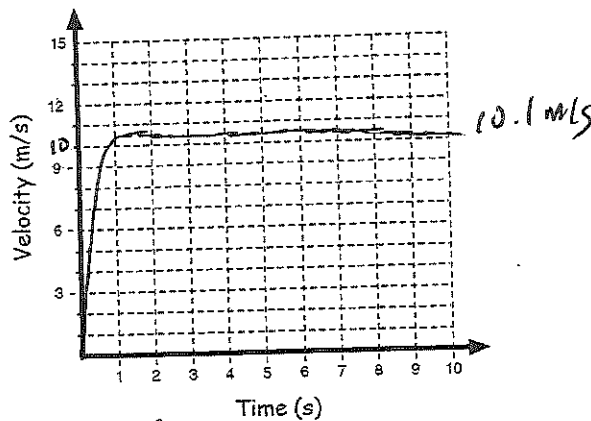
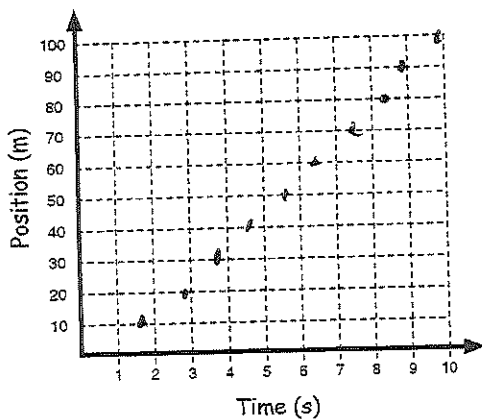
$$\frac{50-35}{5}$$

$$\frac{15}{5} = 3$$

4. In 1991, Carl Lewis became the first sprinter to break the 10-second barrier for the 100 m dash, completing the event in 9.86 s. The chart below shows his time for each 10 m interval.

distance (m)	0	10	20	30	40	50	60	70	80	90	100
time (s)	0	1.88	2.96	3.88	4.77	5.61	6.45	7.29	8.12	8.97	9.86

Plot Lewis's displacement vs. time and velocity vs. time on graphs similar to the ones below.



I just did average velocity

Use this space for summary and/or additional notes:

$$100/9.86 = 10.1 \text{ m/s}$$

$$\frac{50-0}{5} = -10 \text{ m/s}$$

