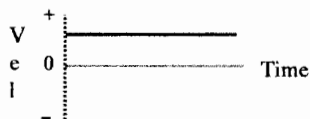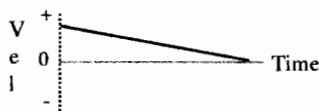## Velocity-Time Graphs

After studying the velocity-time graphs you have made, answer the following questions:

1. How do you move to create a horizontal line in the positive part of a velocity-time graph, as shown above?   *move at const. speed in the same dir .*

2. How do you move to create a straight-line velocity-time graph that slopes up from zero, as shown above?   *Constant acceleration in the +ve dir, starting w/ zero velocity*

3. How do you move to create a straight-line velocity-time graph that slopes down, as shown above?   *moves away from origin w/ constant deceleration, slowly down to zero velocity.*

4. How do you move to make a horizontal line in the negative part of a velocity-time graph, as shown above?   *move in the -ve dir at constant speed .*
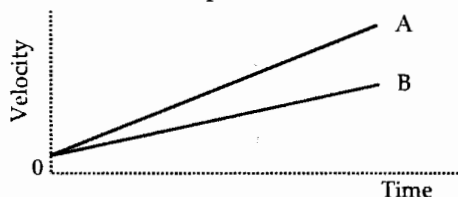
5. The velocity-time graph of an object is shown below. Figure out the total change in position (*displacement*) of the object. Show your work.

Displacement = ___8___ meters.

area = 2m/s · 4s = 8m
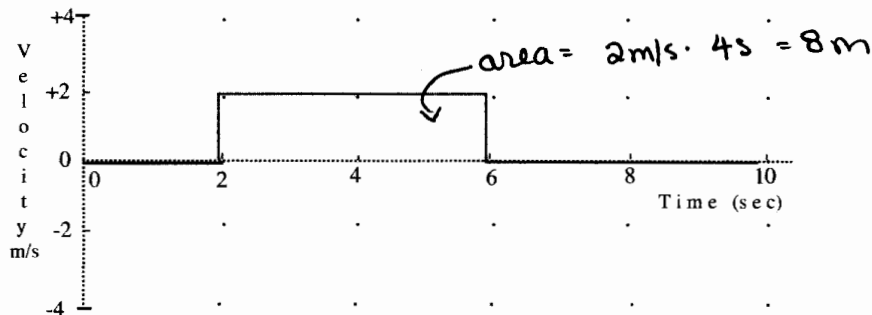
6. Both of the *velocity* graphs below, 1 and 2, show the motion of two objects, A and B. Answer the following questions separately for 1 and for 2. Explain your answers when necessary.

Graph 1

Graph 2

a) Is one faster than the other? If so, which one is faster? (A or B)

Yes A's faster

a) Is one faster than the other? If so, which one is faster? (A or B)

Yes A's faster at first, B is faster at the end

b) What does the intersection mean?

same velocity at t=0

b) What does the intersection mean?

they are at the same velocity at time t

c) Can one tell which object is "ahead"? (define "ahead")
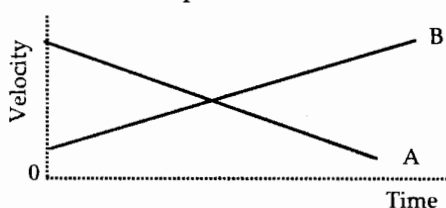
No. (ahead as in one car w/ x greater than the other)

c) Can one tell which object is "ahead"? (define "ahead")

no. ahead as in one car at greater x than the other.

d) Does either object A or B reverse direction? Explain.

no. Velocity is always ⊕

d) Does either object A or B reverse direction? Explain.

no. Velocity always ⊕

12. Draw careful graphs below of position and velocity for a cart that—

   a. moves away from the origin at a slow and *steady* (constant) velocity for the first 5 seconds.

   b. moves away at a medium-fast, *steady* (constant) velocity for the next 5 seconds.

   c. stands still for the next 5 seconds.

   d. moves toward the origin at a slow and *steady* (constant) velocity for the next 5 seconds.

   e. stands still for the last 5 seconds.