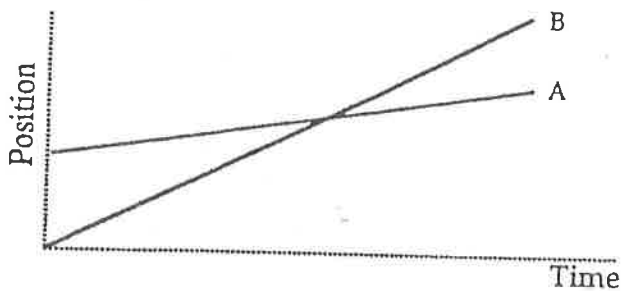


Answer the following about two objects, A and B, whose motion produced the following position-time graphs.



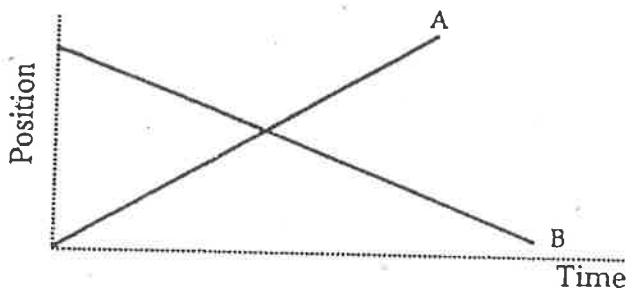
6. a) Which object is moving faster--A or B? *B - steeper slope*

b) Which starts ahead? Define what you mean by "ahead."

Its position is that "ahead" in front of a person relative to a starting point/origin

c) What does the intersection mean?

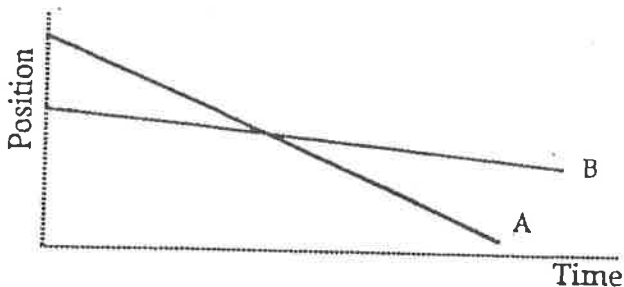
A & B are at the same position at that particular time.



7. a) Which object is moving faster? *Close to the same... A/B might be a bit steeper.*

b) Which object has a negative velocity according to the convention we have established?

B - only ⊖ b/c moving in the opposite direction



8. a) Which object is moving faster?

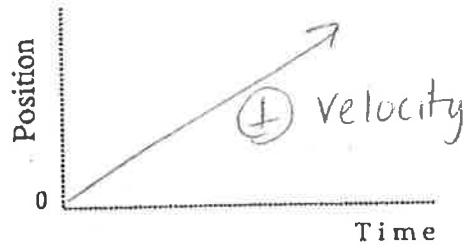
A - steeper slope

b) Which starts ahead? Explain what you mean by "ahead."

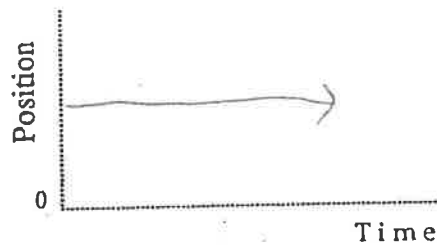
A starts further away from the origin (starting point) ∴ B has a head start, position wise, for the end.

Sketch the position-time graph corresponding to each of the following descriptions of the motion of an object.

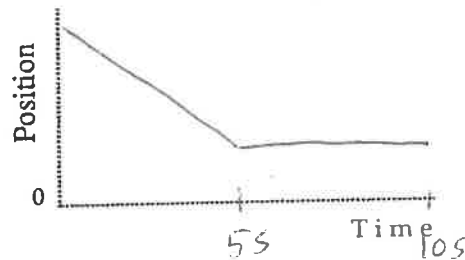
9. The object moves with a steady (constant) velocity away from the origin.



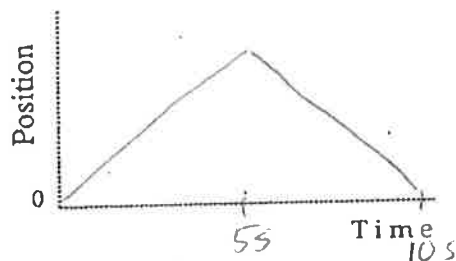
10. The object is standing still.



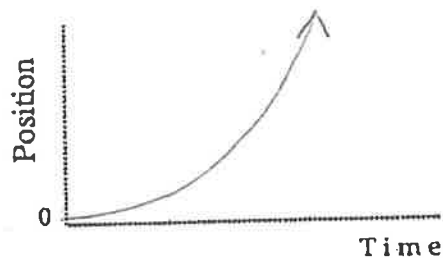
11. The object moves with a steady (constant) velocity toward the origin for 5 seconds and then stands still for 5 seconds.



12. The object moves with a steady velocity away from the origin for 5 seconds, then reverses direction and moves at the same speed toward the origin for 5 seconds.

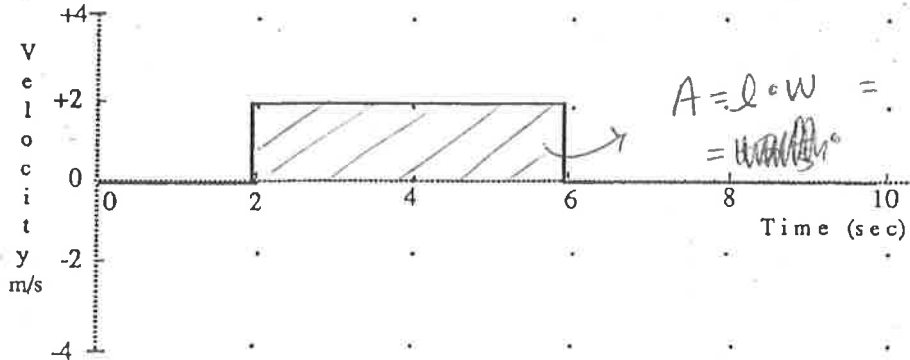


13. The object moves away from the origin, starting slowly and speeding up.



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. *Area under vt graph is displacement*

Displacement = _____ meters.

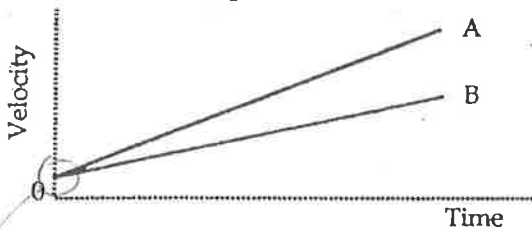


$A = l \cdot w = 4s \cdot 2 \frac{m}{s}$
 $= 8m$

$A = +8m$
 $\Delta X = +8m$

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



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

A is accelerating more quickly ∴ faster

b) What does the intersection mean?

Start at the same velocity

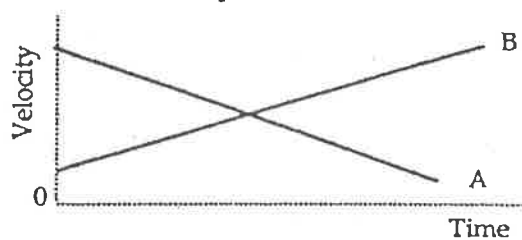
c) Can one tell which object is "ahead"? (define "ahead")

if you assume b/c A is accel. more quickly then it achieves a higher velocity which would mean it has moved farther
NO ... this isn't a position graph - can only tell how fast A & B going

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

NO - no change in direction of slope... both (+) for duration

Graph 2



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

SAME - slopes about the same

b) What does the intersection mean?

They have the same velocities at that time (but different directions) - cannot know position from this graph

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

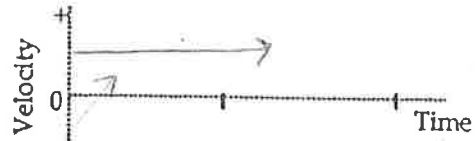
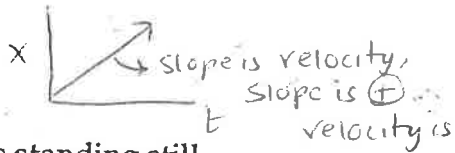
Both move in same direction, B getting faster, A slowing down. Same rate getting slower → B will continue traveling

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

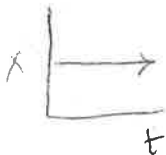
*same → one (A) always ⊖
 → other (B) always ⊕
 no change in direction*

Sketch the velocity-time graph corresponding to each of the following descriptions of the motion of an object.

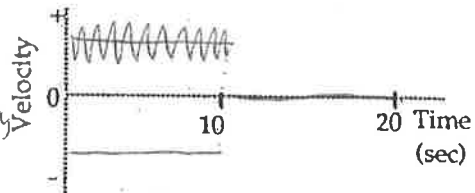
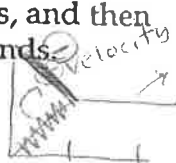
7. The object is moving away from the origin at a steady (constant) velocity.



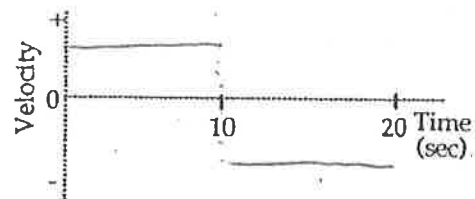
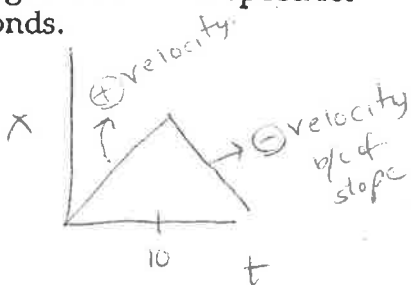
8. The object is standing still.



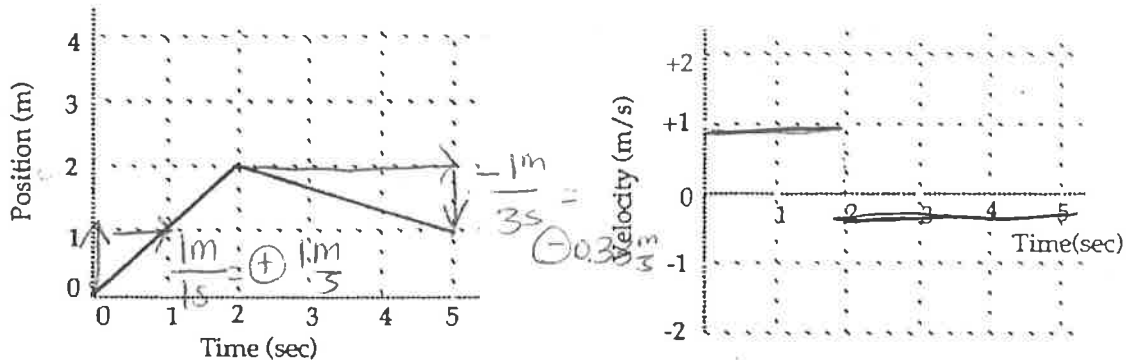
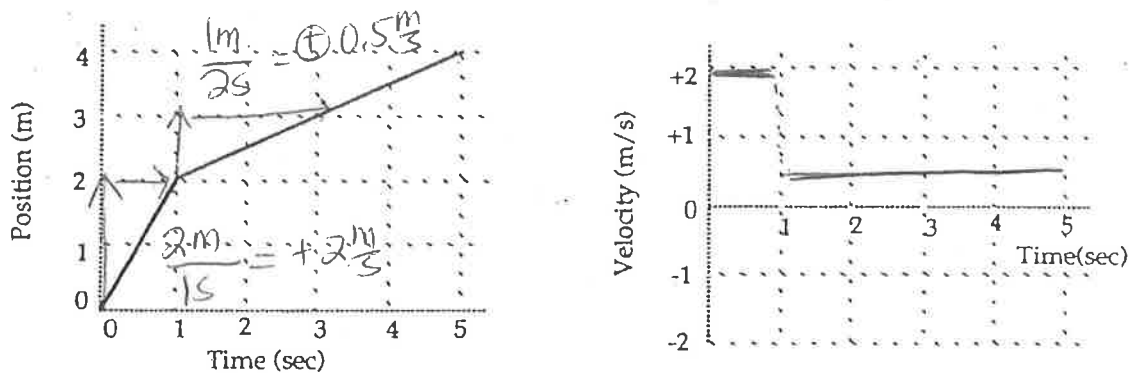
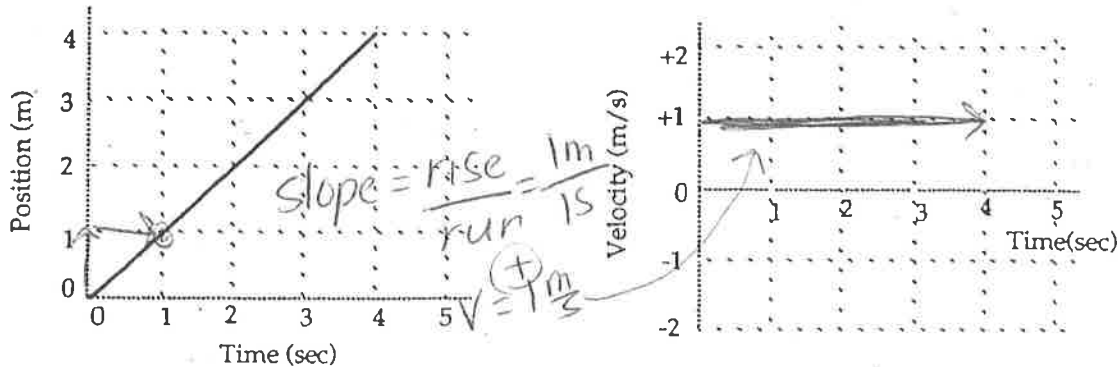
9. The object moves toward the origin at a steady (constant) velocity for 10 seconds, and then stands still for 10 seconds.



10. The object moves away from the origin at a steady (constant) velocity for 10 seconds, reverses direction and moves back toward the origin at the same speed for 10 seconds.



1. Draw the velocity graphs for an object whose motion produced the position-time graphs shown below on the left. Position is in meters and velocity in meters per second. Note: Unlike most real objects, you can assume these objects can change velocity so quickly that it looks instantaneous with this time scale.



12. Draw careful graphs below of position and velocity for a cart that—
- moves away from the origin at a slow and *steady* (constant) velocity for the first 5 seconds.
 - moves away at a medium-fast, *steady* (constant) velocity for the next 5 seconds.
 - stands still for the next 5 seconds.
 - moves toward the origin at a slow and *steady* (constant) velocity for the next 5 seconds.
 - stands still for the last 5 seconds.

