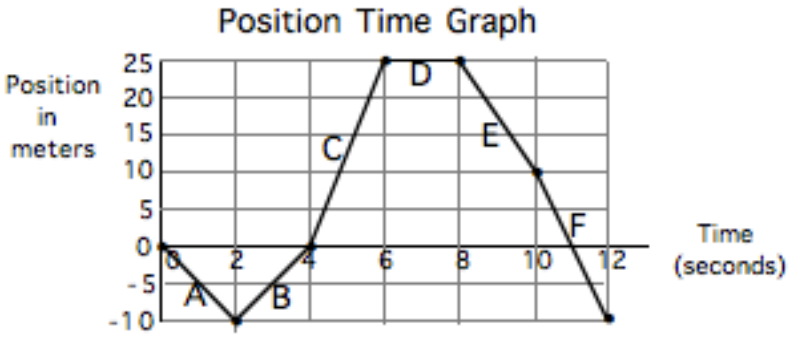
Position Time Graph Practice Name:_____

1. Consider the position time graph shown at the right to answer the questions that follow.



a. During which interval (A,B etc) is the object stationary?

b. During which intervals is the object moving in the negative direction?

c. In which interval is the object moving the fastest in the positive direction?

d. At what times is the object located at the origin?

e. Calculate the object's velocity during interval B.

f. Calculate the object 's velocity during interval F.

g. What is the total distance travelled?

h. What is the total displacement?

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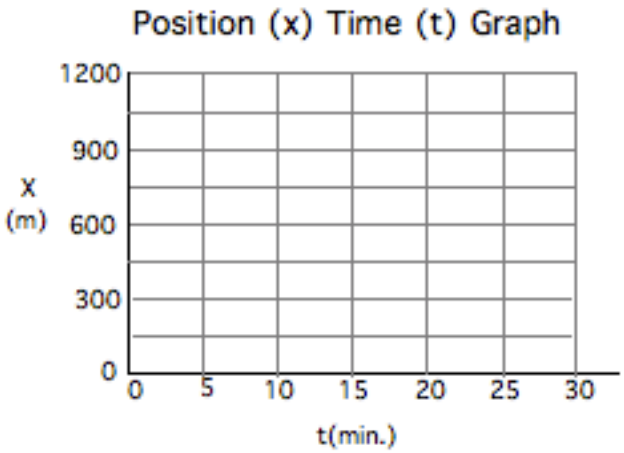
2. A person goes for a walk from his house. He walks at a constant velocity of 60 m/min for 20 minutes. He stops for 5 minutes, then jogs back home in 5 minutes at a constant rate.

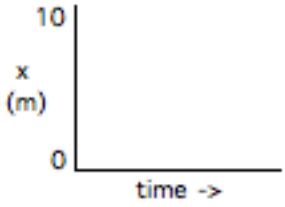
   a. Draw a graph which relates the information given above.

   b. With what speed did the person jog back home?

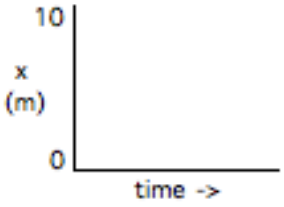


3. Sketch a graph which represents each of the following motions.

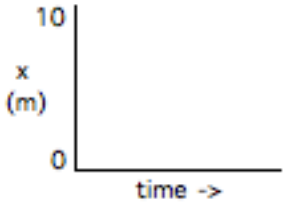
a) A stone is dropped from a height of 10 m. As is falls, it steadily picks up speed until it suddenly comes to halt on the ground.



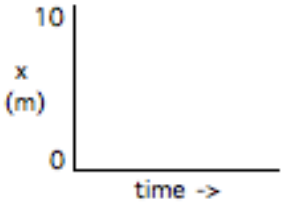
b) A stone is tossed straight upwards to a maximum height of 10 m. It steadily loses speed on its way up, then steadily gains speed on its way down.



c) A ball is dropped from a height of 10 m, hits the floor and bounces up to the same height.



d) a ball rolls along a floor at constant speed, hits a wall 10 m away, then rolls back again at the **same speed**.



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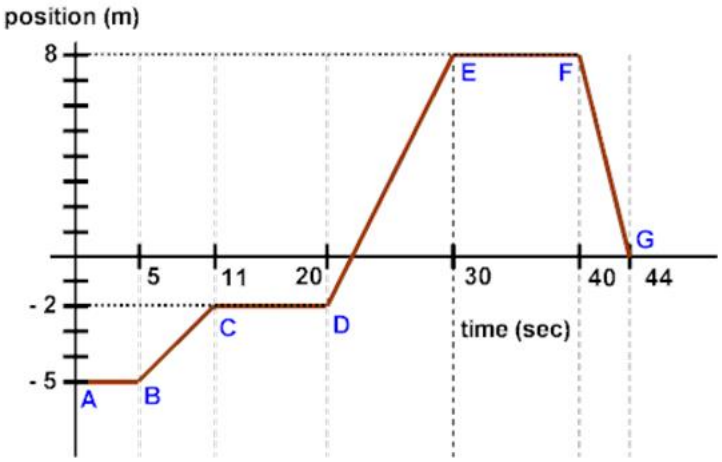
4. Consider the position time graph shown on the right



a. During which time interval (AB, BC, CD, DE, EF, FG) was the object traveling at its greatest speed?

b. During which time interval (AB, BC, CD, DE, EF, FG) was the object traveling at its least (nonzero) speed?

c. During which time interval(s) (AB, BC, CD, DE, EF, FG) was the object at rest?

d. During which time interval(s) (AB, BC, CD, DE, EF, FG) did the object travel in a negative direction?

e. What was the object's speed at 42 seconds?

f. What was the object's velocity at 42 seconds?

g. What was the cart's displacement over the entire graph?

h. What was the cart's average velocity during these 44 seconds?

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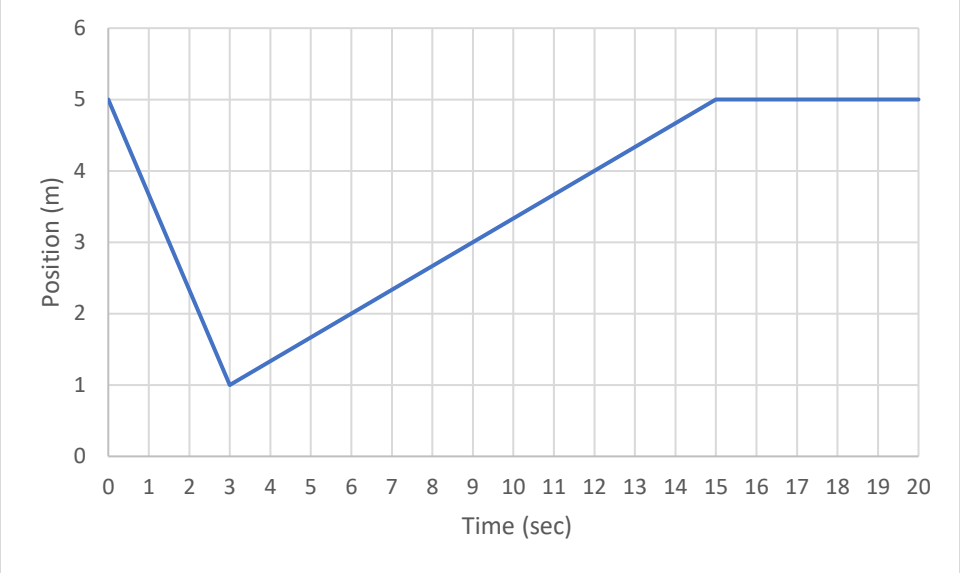
5. Describe in detail, including velocities, the motion shown on the following position time graphs.

a.



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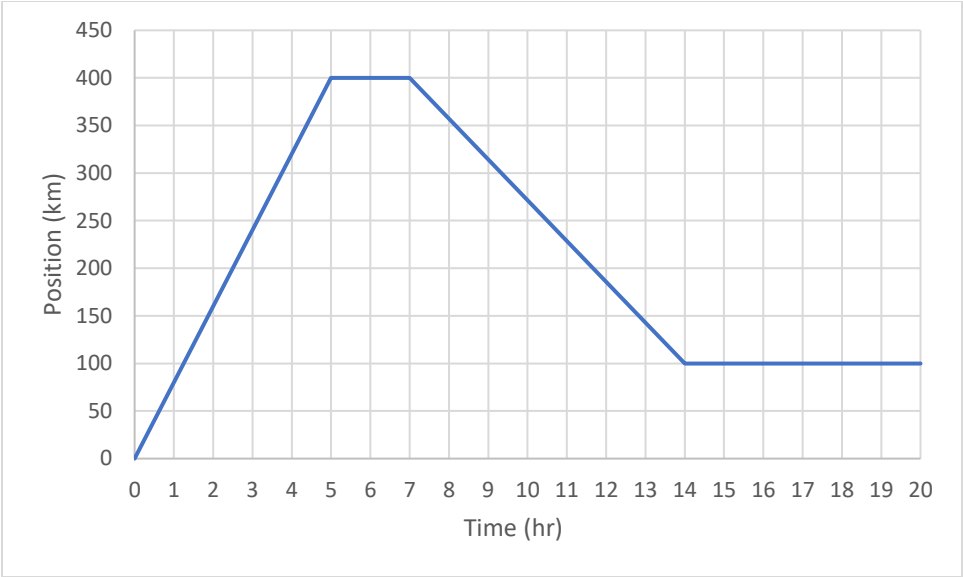
b.



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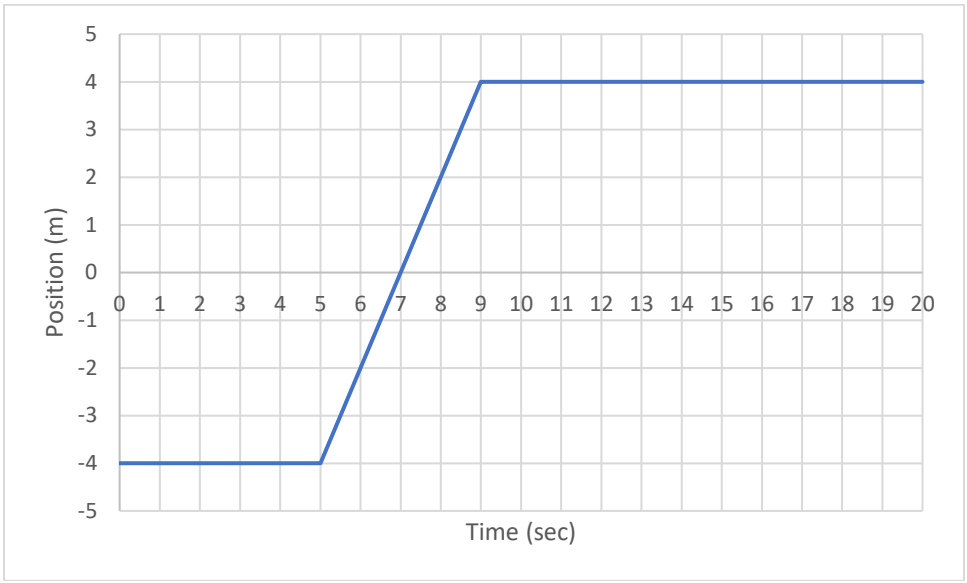
c.



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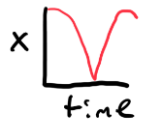
Answer Key

1a) D	1b) A, E and F	1c) C	1d) 0, 4 and 11 sec	1e) 5 m/sec
1f) -10 m/sec	1g) 80 m	1h) -10 m	2a) Should have straight line from (0,0) to (20,1200), then to (25, 1200) and finally straight back to (30,0)	2b) 240 m/min
3a) 	3b) 	3c) 	3d) 	4a) FG
4b) BC	4c) AB, CD, EF	4d) FG	4e) 2 m/s	4f) -2m/s
4g) 5m	4h) 0.11 m/s	5a) First moves in negative direction at -1.3 m/s, then in positive direction at 0.3 m/s, last 5 seconds it is at rest	5b)First moves in the positive direction at 80 km/hr, then rests for 2 hours, then moves in negative direction at 43 km/hr until t=14 and it stationary afterwards	5c)At rest until t=5, then moves in the positive direction at 2 m/s from t=5 to t=9. From t=9 onwards it doesn't move.