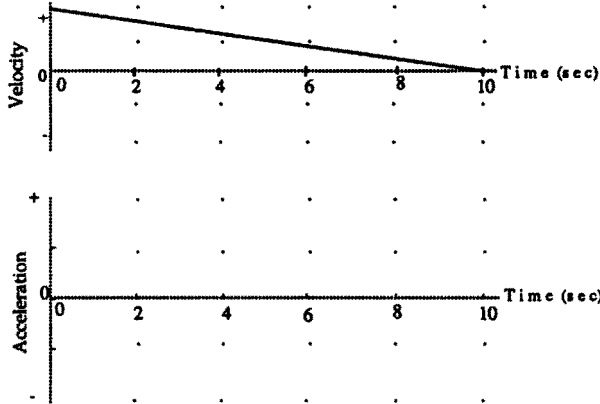
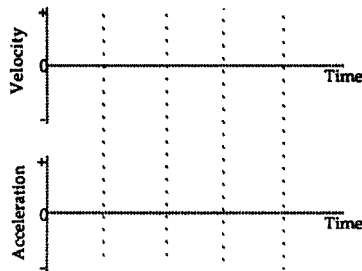


19. For the velocity-time graph shown below, sketch the shape of the acceleration-time graph that goes with it.

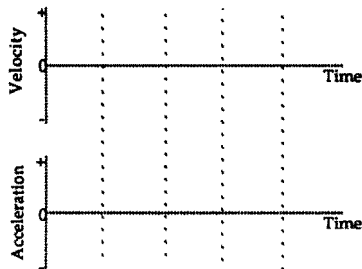


Use the following information to answer the next five questions. A car can move along a line (the + position axis). Sketch velocity-time and acceleration-time graphs which correspond to each of the following descriptions of the car's motion.

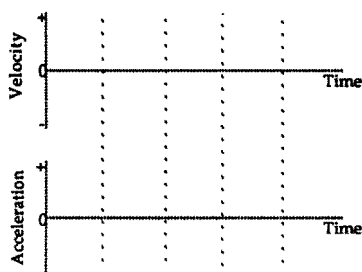
20. The car starts from rest, and moves away from the origin increasing its speed at a steady rate.



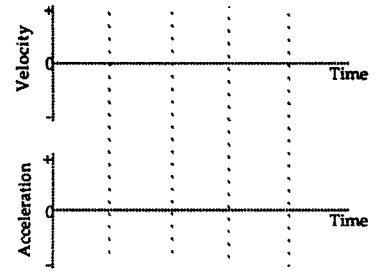
21. The car is moving away from the origin at a constant velocity.



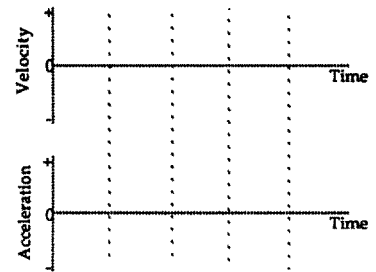
22. The car starts from rest, and moves away from the origin increasing its speed at a steady rate twice as large as in the question above.



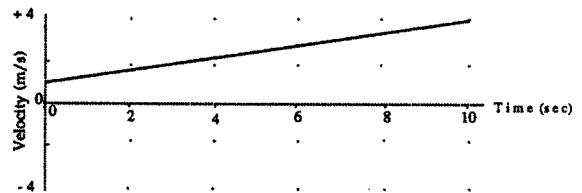
23. The car starts from rest, and moves toward the origin increasing its speed at a steady rate.



24. The car is moving toward the origin at a constant velocity.



The following is a velocity-time graph for a car.



25. What is the average acceleration of the car?

26. A car moves along a line (the + position axis). Fill in the table below with the sign (+ or -) of the velocity and acceleration of the car for each of the motions described.

	Position	Velocity	Acceleration Speeding Up	Acceleration Slowing Down
Car moves away from the origin	+			
Car moves toward the origin	+			

Use the following information to answer the next three questions. Each of the pictures represents a car driving down the road. The motion of the car is described. In each case, specify the sign of the velocity and the sign of the acceleration. (The positive direction is to the right.)

27. The driver has stepped on the accelerator, and the car is just starting to move forward.



Sign of Velocity: _____
Sign of Acceleration: _____

28. The car is moving forward. The brakes have been applied. The car is slowing down, but has not yet come to rest.



Sign of Velocity: _____
Sign of Acceleration: _____

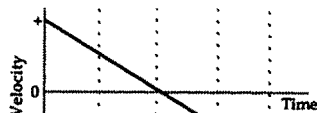
29. The car is moving backward. The brakes have been applied. The car is slowing down, but has not yet come to rest.



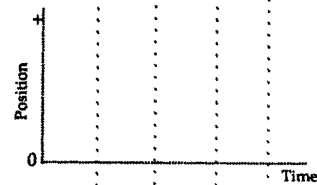
Sign of Velocity: _____
Sign of Acceleration: _____

30. Consider the velocity-time graph shown below.

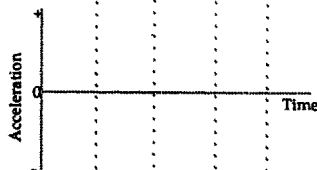
- (a) Describe how you would move to produce this velocity graph.



- (b) Sketch a position-time graph for this motion.



- (c) Sketch an acceleration-time graph for this motion.



Answer the following questions. You may use a graph more than once or not at all, and there may be more correct choices than blanks. If none of the graphs is correct, answer 'J'.

Pick one graph that gives enough information to indicate that the velocity is always negative.

31. _____

Pick three graphs that represent the motion of an object whose velocity is constant (not changing).

32. _____

33. _____

34. _____

Pick one graph that definitely indicates an object whose acceleration is changing.

35. _____

Pick one graph that might possibly be that of an object standing still.

36. _____

Pick three graphs that represent the motion of objects whose acceleration is changing.

37. _____

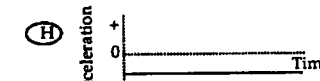
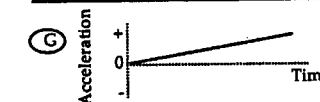
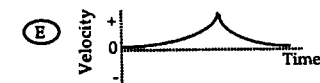
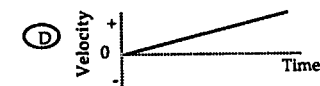
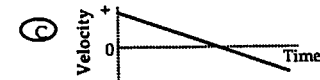
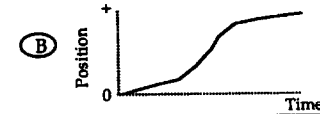
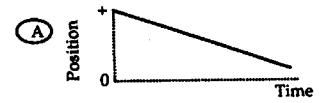
38. _____

39. _____

Pick a velocity-time graph and an acceleration-time graph that could describe the motion of the same object during the time shown.

40. _____ Velocity Graph

41. _____ Acceleration Graph



The graphs on the top of the next column represent the motion of an object along a line which is the positive position axis. Notice that the motion of objects is represented by position, velocity, or acceleration graphs.