

*How many of these questions can you answer given needed formulas?*

- 1) A change in position relative to a frame of reference is called  
a) motion. b) inertia. c) acceleration. d) momentum.
- 2) The speed of an object is measured by its a) distance traveled per unit of time.  
b) amount of acceleration. c) distance traveled. d) total time of motion.
- 3) In an automobile, the speedometer gives you a indication of your  
a) average speed. b) instantaneous speed. c) total speed. d) constant speed.
- 4) A truck is moving at 12 m/s, and increases to 20 m/s.  
a) What is its average velocity?  
b) If the time of this velocity change was 4 seconds, then what is the (a) of this truck?
- 5) A pitcher throws a baseball with a velocity of 132 ft/s. How much time does it take the ball to reach the batter 60 feet away?
- 6) At room temperature sound travels 343 m/s (1,127 ft/s). If you see a lightning flash and hear the thunder 5 seconds later, then how far away was the lightning bolt?
- 7) The speed of light is 300,000,000 m/s. How long does it take light to reach the earth from the sun which is 150,000,000,000 meters away?
- 8) A car travels 540 km in 4.5 hours.  
a) What is the average velocity of the car?  
b) How far will it go in 8 hours at that average speed?  
c) How long will it take to go 200 km at this speed?
- 9) Acceleration (a) is the a) rate of change in velocity. b) rate of change in momentum.  
c) time needed for an object to arrive at its destination. d) average velocity divided by time.
- 10) During takeoff, the velocity of a plane increases from 12 m/s to 24 m/s during 3 seconds. What is its acceleration (a)?
- 11) After a physics class ends a student drops her physics book off the top of the Empire State Building.  
a) How far has it fallen after 5 seconds?  
b) When the book strikes the ground after 5 seconds of free-fall, how fast will it be moving when it strikes the ground? [Neglect air resistance.]
- 12) The Sears Tower in Chicago moves its elevators upward at a speed of 1,600 ft/min. What is this speed in mi./h? [1 mi. = 5,280 ft & 1 h = 3,600 s]

