Conceptual Physics: Name: _____
Unit 4: PreQuiz E-H /30 Date: _____ Period _____

Formula's:

$d = V_o t + \frac{1}{2} a t^2$ $V_f = V_o + at$ $V_f^2 = V_o^2 + 2ad$ $\overline{V} = d / t$ $a = \Delta \overline{V} / t$

3.3 feet = 1 meter Gravity = 9.8 m/s^2 or 32 ft/s^2 1 mile = 5280 feet 1.6 km = 1 mile

True or False Questions: Circle only the ONE best answer. 1 pt. each

T F 1. The rate at which velocity changes with time is called distance.

T F 2. The SI unit of acceleration is meters per second squared.

T F 3. When a car rounds a corner at a constant speed, its acceleration is more than zero.

T F 4. A ball is thrown into the air. At the highest point, the ball has zero velocity and zero acceleration.

T F 5. As a ball falls freely, the distance it falls each second increases until its speed becomes constant.

Multiple Choice Questions: Choose the best answer to each question and write the appropriate letter in the space provided. 2 pts. each

_____ 6. Speed is:
a. A measure of how fast something is moving
b. The distance covered totally
c. Always measured in terms of a unit of distance divided by a unit of acceleration
d. All of the above

_____ 7. One possible unit of speed is:
a. Feet per second
b. Centimeter per hour
c. Light years per century
d. All of the above

_____ 8. When you look at the speedometer in a moving car, you can see the car's:
a. Average distance traveled
b. Average acceleration
c. Instantaneous velocity
d. Instantaneous speed
e. Average speed

_____ 9. Suppose you take a trip that covers 240 km and it takes 4 hours. Your average speed is:
a. 60 km/hr
b. 120 km/hr
c. 240 km/hr
d. 480 km/hr

_____ 10. Acceleration is defined as the CHANGE in: (hint – look at the formula)
   a. Time it takes to move from one place to another place
   b. Time it takes to move from one speed to another speed
   c. Velocity divided by the time interval
   d. Position divided by the time interval

_____ 11. Suppose you are in a car that is going around a curve. The speedometer reads a constant 30 miles per hour. Which one of the following is TRUE.
   a. You and the car are going at a constant velocity
   b. Your speed is changing
   c. Your acceleration is zero
   d. Your speed is constant

_____ 12. Suppose a car is moving in a straight line and steadily increases its speed. It moves from 55 km/h to 75 km/h in 5 seconds. What is the car's acceleration?
   a. 20 m/s^2
   b. 4 m/s^2
   c. 5 m/s^2
   d. 100 m/s^2

_____ 13. A ball is thrown straight up. At the top of its path its velocity is:
   a. 9.8 m/s^2
   b. 9.8 m/s
   c. 0.0 m/s^2
   d. 0.0 m/s
   e. Unknown – it's a secret

Math Problems: Solve the following problems in the space provided. SHOW ALL OF YOUR WORK!!!!

14. What is the average speed of an Elephant that runs 50 meters in 5 seconds? 3 pts.

15. An apple falls from a tree and one and a half second later hits the ground. How fast is it falling when it hits the ground? 3 pts.

Essay Question: Use the space below to answer this question 3 pts.

Write a short answer (using sentences) explaining what acceleration is and why a car is accelerating when it goes around a corner with a constant speed.