Uniform Acceleration Practice Problems

Name_____

Date_____Period_____

1. An object has a speed of 2.00 m/s. Three seconds later it is going 8.00 m/s. What average acceleration did it experience?

2. A car traveling in a straight line has a speed of 30.0 m/s at some instant. After 3.00 s, its speed is 20.0 m/s. What is its average acceleration in this time interval?

3. An object is accelerated from rest at a constant rate of 5.00 m/s^2. What will be its speed after 8.00 seconds?

4. A car company claims that its car can accelerate from rest to a speed of 28.0 m/s in 20.0 s. Find the average acceleration of the car and the distance it goes in this time.

5. Atom Ant is traveling with an initial velocity of 20.0 cm/s. He begins to accelerate at a rate of 8.00 cm/s^2 for 5.00 s. What is his total displacement during the 5.00 seconds of motion? What is his displacement in the last second?

6. A skier starts from rest and slides 9.00 m down a slope in 3.00 s. In what time after starting will the skier acquire a velocity of 24.0 m/s? Assume constant acceleration.

ACCELERATION CALCULATIONS

Name _____

Acceleration means a change in speed or direction. It can also be defined as a change in velocity per unit of time.

$$a = \frac{v_f - v_i}{t}$$

where a = velocity
v_f = final velocity
v_i = initial velocity
t = time

Calculate the acceleration for the following data.

	Initial Velocity	Final Velocity	Time	Acceleration
1.	0 km/hr	24 km/hr	3 s	_____
2.	0 m/s	35 m/s	5 s	_____
3.	20 km/hr	60 km/hr	10 s	_____
4.	50 m/s	150 m/s	5 s	_____
5.	25 km/hr	1200 km/hr	2 min	_____

6. A car accelerates from a standstill to 60 km/hr in 10.0 seconds.
   What is its acceleration? _____

7. A car accelerates from 25 km/hr to 55 km/hr in 30 seconds.
   What is its acceleration? _____

8. A train is accelerating at a rate of 2.0 km/hr/s.
   If its initial velocity is 20 km/hr, what is its velocity after 30 seconds? _____

9. A runner achieves a velocity of 11.1 m/s 9 s after he begins.
   What is his acceleration? _____
   What distance did he cover? _____