**Forces and Motion Study Guide**

Define the following:

Scientific Method-

Hypothesis-

Inference-

Independent Variable-

Dependent Variable-

Controlled Variable-

Force-

Distance-

Speed-

Velocity-

Acceleration-

Instantaneous speed-

Law of Conservation of Momentum-

Inertia-

Mass-

Weight-

Law of Conservation of Energy-

Action Force-

Reaction Force-

Gravity
You should be able to solve problems like these:

1. A roller coaster is moving at 40 m/s at the bottom of a hill. Three seconds later it reaches the top of the hill moving at 10 m/s. What was the acceleration of the coaster?

2. A car's velocity changes from 0 m/s to 40 m/s in 10 seconds. What is its acceleration?

3. Find the momentum of a 10 kg wagon traveling down a hill at 12 m/s.

4. Which has greater momentum, a 2.0kg hockey puck moving east at 2.5m/s or a 1.3kg hockey puck moving south at 3.0m/s?

5. John walks at a steady speed of 3 mph. How long will it take him to travel 24 miles?

6. Mrs. Blackburn is driving at a speed of 65 mi/hr. How long does it take her to go 25 miles? Express answer in minutes

Newton's ______ law of motion states that an ___________________ stays _______________________ and an ___________________ stays _______________________.

An example of this law is ______________________________________

Newton's ______ law of motion states that the acceleration of an object is __________ proportional to the ________ _________ and __________ proportional to its mass. In other words, \( F = ma \)

An example of this law is ______________________________________

Newton's ______ law of motion states forces act in equal but opposite pairs.

You should also be familiar with these scientists:

George Washington Carver

Sir Francis Bacon
Charles Darwin

Joseph Priestly

REVIEW YOUR MOTION GRAPHS! You should be able to describe what is happening in a graph
This is a Distance-Time Graph

(Graph from: http://www.bbc.co.uk/schools/gcsebitesize/physics/forces/speedvelocityaccelerationfhrev2.shtml)

This is a SPEED- TIME Graph