Assignment: \_\_\_\_

Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Hour:\_\_\_\_

**Newton’s Laws of Motion (1+2)**

**Newton’s First Law of Motion**

“An object at rest remains at rest and an object in motion maintains its velocity unless it experiences a net force.”

* In other words… An object at \_\_\_\_\_\_\_\_\_\_\_ tends to \_\_\_\_\_\_\_\_\_ at \_\_\_\_\_\_\_\_\_\_\_\_. An object in \_\_\_\_\_\_\_\_\_\_\_\_\_\_ tends to \_\_\_\_\_\_\_\_\_\_\_\_\_ in \_\_\_\_\_\_\_\_\_\_\_\_\_\_ unless acted on by a net \_\_\_\_\_\_\_\_\_\_\_\_.

**The First Law and Inertia**

**Inertia** – the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of an object to \_\_\_\_\_\_\_\_\_\_\_ a \_\_\_\_\_\_\_\_\_\_\_\_ in \_\_\_\_\_\_\_\_\_\_\_\_\_\_ unless an outside \_\_\_\_\_\_\_\_\_\_\_\_\_ acts on the object

Ex. Riding in a car, driver slams on the brake, purse on the seat slides to the floor

**Newton’s Second Law**

“The unbalanced force acting on an object equals the object’s mass times its acceleration”

* The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ force on an object \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ how much an object \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ up or slows \_\_\_\_\_\_\_\_\_\_\_
* Equation:

**Force Problems:**

Three different ways to write the equation….

What are the units for each variable?

What is the triangle you can use to solve these problems?

**SHOW YOUR WORK TO GET CREDIT!!**

1. Given a force of 100 N and an acceleration of 10 m/s2, what is the mass of the object?

2. A net force of 16 N causes a mass to accelerate at a rate of 5 m/s2. Determine the mass.

3. How much force is needed to accelerate a 66 kg skier 1 m/sec/sec?

4. What is the force on a 1000 kg elevator that is falling freely at 9.8 m/sec/sec?

5. How much force is required to accelerate a 2kg mass at 3 m/s2?

6. What is the acceleration of a 10 kg mass pushed by a 5 N force?

7. Given a force of 88N and an acceleration of 4 m/s/s, what is the mass?

8. What acceleration will result when a 12 N net force applied to a 3 kg object? A 6 kg object? Which one will accelerate faster when the same force is applied to it?

**Complete the following chart:**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Balance or Unbalanced | Net Force | In what direction will it move (or does it not move at all?)? |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

**Putting it all together: (SHOW YOUR WORK!!)**

1. Find the acceleration of the 2 kg block in the following diagram.



1. Find the acceleration of the 1 kg block in the following diagram.

