**Newton’s Laws- Fill in the Blank**

1st Law

Newton’s first law of motion is also known as the Law of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Newton’s first law says that an object that IS NOT MOVING, or is at \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, will stay at \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, AND an object that IS MOVING will keep moving with constant \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, which means at the same \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and in the same \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, UNLESS an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ force acts on that object.

2nd Law

Newton’s second law says that when an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ force is applied to a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, it causes it to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The greater the force that is applied, the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the acceleration. The lesser the force that is applied, the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the acceleration. If the same force is applied to an object with a large mass, it will have a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ acceleration. If the same force is applied to an object with a small mass, it will have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ acceleration.

The equation that is used to solve second law problems is F = ma.

What do each of the variables mean?

F = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ m = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ a = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ What UNIT of measurement must be used with each variable?

F = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ m = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ a = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3rd Law

Newton’s third law states that forces must always occur in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Newton’s third law says that every time there is an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ force, there is also a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ force that is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in size and acts in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ direction.

Listed below are ACTION forces. State the REACTION force.

a. Your bottom pushing on your seat. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b. A foot kicking a soccer ball. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

c. Your finger pressing on your phone screen while texting. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

d. Pushing down on the ground with your feet. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

e. Pulling a rope that is tied to a box.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Newton’s Laws Review Worksheet**

**Write a 1, 2 or 3 for each of the following to indicate whether its Newton’s 1st Law, Newton’s 2nd Law, or Newton’s 3rd Law.**

\_\_\_\_\_1. A climber pulls down on a rope causing his body to lift upward and rise up along the rope.

\_\_\_\_\_2. Force = Mass x Acceleration

\_\_\_\_\_3. Two bumper cars collide into each other and each car jolts backwards

\_\_\_\_\_4.When you give your friend a lift on your bike you have to pedal harder and faster to keep the same speed (and acceleration) as you had before when you were on your bike alone.

\_\_\_\_\_5. For every action there is an equal and opposite reaction.

\_\_\_\_\_6. A smaller cannon ball leaves a cannon much faster than a larger, heavier cannon ball fired from the same cannon.

\_\_\_\_\_7. When you are standing in a subway train, and the train suddenly stops, your body continues to go forward.

\_\_\_\_\_8. An object at rest/motion will stay at rest/ motion unless acted on by an outside, unbalanced force.

\_\_\_\_\_9. It is much easier to carry your backpack when it is empty rather than when it’s full of textbooks

\_\_\_\_\_10. A boy is going down a slide. As he reaches the bottom, friction causes him to slow down and stop.

\_\_\_\_\_11. As the wheels of a drag racing car smoke and spin backwards, they eventually begin to grip the

race track and push backwards on the road. In turn, the road reacts by pushing the wheels forward.

\_\_\_\_\_12.When you throw a bowling ball out of a canoe, the bowling ball moves forward and the canoe moves backward.

\_\_\_\_\_13. A little girl who has been pulling a sled behind her in the snow is crying because when she stopped to tie her shoe, the sled kept moving and hit her in the back of the leg.

\_\_\_\_\_14. A grocery cart is sitting motionless in the parking lot at Wal-mart. You decide to jump in and your friend pushes you around.

\_\_\_\_\_15. A basketball sits in the ball cage in the gym. It remains motionless.











