**Force and Motion**

A force is a push or a pull. Forces are described not only by how strong they are, but also by the direction in which they act. The strength of a force is measured using a unit called the Newton (N), named for Isaac Newton. Picking up a small lemon requires you to exert a force of about one Newton. Forces can be shown using arrows. The length of the arrow represents the size of the force, and the direction of the arrow shows the direction of the force. The overall force on an object, called the net force, is found by combining all of the forces acting on the object. The size of the net force determines whether the object’s motion changes. The direction of the net force determines the direction of the object’s motion. When two forces act in the same direction, they add together. When forces act in opposite directions, they are combined by subtracting the smaller force from the larger force. The direction of the resulting force (resultant) is the direction of the larger original force. When there is a net force acting on an object, the forces are said to be unbalanced.

Unbalanced forces cause an object to start moving, stop moving, or change direction. Unbalanced forces acting on an object will change the object’s motion. Unbalanced forces acting on a moving object can also stop a moving object. The three main forces that stop moving objects are friction, gravity and wind resistance.

Equal forces acting in opposite directions are called balanced forces. Balanced forces acting on an object will not change the object’s motion. When you add equal forces in opposite direction, the net force is zero.

A force can be shown with a vector. A vector is a line with an arrow. It begins with a dot showing where the force begins. The length of the arrow shows the amount of force. The arrows show the direction of the force. Vectors are often used to show the net force acting on an object. By combining two vectors you can determine the resulting force (resultant).
Force and Motion

A force is a ________________ or a pull. Forces are described not only by how strong they are, but also by the ______________________ in which they act.

The strength of a force is measured using a unit called the _______________ (N), named for Isaac Newton. Picking up a small lemon requires you to exert a force of about one Newton. Forces can be shown using _______________. The length of the arrow represents the size of the force, and the _________________ of the arrow shows the direction of the force. The overall force on an object, called the________ force, is found by ______________ all of the forces acting on the object. The size of the net force determines whether the object’s ______________ changes. The direction of the net force determines the direction of the object’s motion. When two forces act in the ______________ direction, they add together. When forces act in ______________ directions, they are combined by ______________ the smaller force from the larger force. The direction of the resulting force (__________) is the direction of the larger original force. When there is a net force acting on an object, the forces are said to be ______________.

Unbalanced forces cause an object to start moving, __________ moving, or change direction. Unbalanced forces acting on an object will change the object’s ______________. Unbalanced forces can also stop a moving object. The three main forces that stop moving objects are friction, ______________ and wind resistance.
Equal forces acting in opposite directions are called ______________ forces.

**Balanced forces acting on an object will not change the object’s motion.** When you ___ equal forces in opposite direction, the net force is ________.

A force can be shown with a ___________. A vector begins with a dot ___________ begins. shows the amount of force. The arrows show the ____________ of the force. Vectors are often used to show the ________ force acting on an object. By combining ________ vectors you can determine the resulting force (resultant).

(Meter stick example)