Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Test Date\_\_\_\_\_\_\_\_\_

**Chapter 12: Forces and Motion ---Study Guide**

These items can be found in your child’s packet in the science section or in their science book. All items have been discussed at length in class. Please refer to the cover of the packet to view which packet pages to study.

**Words to Know:**

position relative position speed motion force magnetism gravity work friction

**\*Here is a link to help your child to study the vocabulary for Chapter 12.**

[http://quizlet.com/1022513/scott-foresman-science-grade-3-chapter-12-flash-cards/](javascript:oDWin('http://quizlet.com/1022513/scott-foresman-science-grade-3-chapter-12-flash-cards/');)

**(This link and other links are posted on your science teacher’s website.)**

**Ideas to Know:**

* If an object is in a different location, its **position** has changed. The speed and direction of an object’s motion can change also.
* The position, direction, and movement of an object often depend on how a person looks at it.
* **Relative position** is the position of one object compared with the position of other objects.
* Speed is the rate, or how fast, an object changes its position. Speed can be fast or slow, and sometimes moving objects do not change how fast or slow they move. They move at a **constant** **speed**.
* **Variable speed** means that the speed changes. An object moving at a variable speed changes speed as it moves.
* A **force** is any push or pull. A force can change an object’s position or the direction of its motion. How much an object changes its direction and speed depends on how much force is used. (If you push harder on a moving shopping cart, it will move faster.)
* **Friction** is a contact force that goes against motion. Friction can cause a moving object to slow down or stop.

The amount of friction between two objects depends on their surfaces. (Pushing a cart across a smooth surface is easier than pushing a cart across a bumpy surface.)

***\*\*\*\*\*\*\*\*\*\*\*\*PLEASE TURN OVER----CONTINUED ON THE BACK!***

* A **non-contact force** is a push or pull that can affect an object without touching it.
* **Gravity** is a non-contact force that pulls objects toward each other. The amount that gravity pulls on an object is its weight. An object’s weight depends on where it is. (Ex. Since the moon has less gravity than Earth, objects weigh less on the moon than on Earth)
* **Magnetism** is another non-contact force. Magnets pull on, or attract, certain kinds of metal.
* Objects with more matter have more mass. The pull of gravity is greater if the object it is pulling has more mass. Even if the pull of gravity on an object changes, the object’s mass remains the same.
* **Work** is moving matter from one place to another. You do **work** when you use a force to move an object. Work is **NOT** done when the position of an object does not change.
* Machines help make work easier. **There are six kinds of simple machines: inclined plane, wedge, screw, lever, wheel and axle, and pulley.**
* An **inclined plane**, or a ramp, is a slanting surface that connects a lower level to a higher level. (ex. ramp, ladder)
* **Wedges** are used to split, cut, or fasten things. A wedge is a simple machine made up of two slanted sides that end in a sharp edge. (ex. ax, nail, knife)
* A **screw** is an inclined plane wrapped around a center post. Screws are used to hold things together and to raise and lower things. (ex. jar lid, light bulb)
* A **lever** is a stiff bar that rests on a support. A lever is used to lift and move things. (ex. seesaw, stapler)
* A doorknob is an example of a **wheel and axle**. The knob is a wheel and the post that attaches to its center is an axle. (ex. Ferris wheel, merry-go-round, door knob)
* A **pulley** changes the direction of motion of an object to which a force is applied. (ex. window blind, flag pole, sails on a sailboat)
* Be able to name at least 2 simple machines that you used today and tell how they make work easier.