NEWTON'S LAW OF MOTION

We'll get to Newton's Laws of Motion in a moment…but first there are some important words we need to explore first…

What is M - O - - T - - - I - - - - O - - - - - N?

Motion is the process of an object changing its place or its position. Motion is *not* speed. **Speed** is the *rate* an object changes position.

→FORCE←

A **force** is a push or pull upon an object. Forces can change the position and motion of an object. There are forces that affect objects that come in physical contact with each another. There are also forces that can affect objects even without physical contact.

Types of

Friction is ~~the~~ ~~~~ ong a
surface. F~~~~ ~~~~t. If you
tried to ski~~~~ ~~~~uld slow
or stop your movement. When you ski on snow, there is less friction between the skis and the snow, which is slippery, so you can move quickly.

Gravity is an attractive force that attempts to pull two or more objects together. Gravity depends on the objects' mass and the distance between them.

One last word to explore, **inertia**, which is an object's resistance to the change of motion.

Newton's First Law of Motion

An object at rest tends to stay at rest and an object in motion tends to stay in motion with the same speed and in the same direction unless acted upon by an unbalanced force.

Meaning, if you place a book on your desk, it will remain at rest on your desk unless something (or someone) causes it to move.

Lesson Checkpoint: Describe Newton's First Law of Motion.

Newton's Second Law of Motion

The force of an object is equal to its mass times its acceleration.

If you were to hold a book and a pencil high at the same height in the air and drop them both, which item do you think would hit the ground with a grea... ...mass of the book a... ...ter mass would hit t... ...ok has more mass... ...ith a greater for... ...Law.

...Second Law of Motion.

Newton's Third Law of Motion

For every action there is an equal and opposite reaction.

Example of what this means:
When object A exerts a force onto object B, object B exerts a force of equal strength in the opposite direction on object A.

| Object A | → ← | Object B |

Lesson Checkpoint: Describe Newton's Third Law of Motion.

Newton's Law of Gravitation

Newton's Universal Law of Gravitation states that any two objects exert a gravitational force on each other. The strength of the gravitational force is dependent upon the mass of the objects. The larger the mass of the objects, the larger the force between the two objects. The strength of the gravitational force is also dependent upon the distance between the objects. The farther away the two objects are, the weaker the gravitational force is between them.

Gravity Facts:
If you drop an object, it will fall directly to the ground – because of gravity.
Planets orbit around the sun - because of gravity.

Work, Work, Work
Work is the ability to move an object. The key word here is MOVE. An object MUST move in order for work to have been done.

Simple M
Simple ma   s work.

There ar

A **pulley** h   run around in order to lift a load easier than without it. An example of a pulley can be seen on a flagpole, where the rope is used to raise and lower the flag.

A **wheel and axle** consists of a bar that a wheel revolves around on or along with it.

A **lever** is a simple machine that is a board that can move on a fixed point, called a fulcrum, and can be used to move an object up or down.

A **wedge** is simple machine that is actually two inclined planes joined together back to back. Wedges are often used to split wood.

A **gear** is made of two wheels that have notches that fit together either directly or by a chain or belt which allows one wheel to turn the other wheel. Gears help clocks and bicycles move.

Lesson Checkpoint: What is one type of simple machine?