

Read the following, copying into your notes anything you want to remember.

This unit deals with **Dynamics** - the study of how forces affect motion.

In Physics, we like to study why things move, not just how... motion is affected by **Forces**, which are pushes or pulls. (Tough definition, huh?) These pushes and pulls are placed into specific categories by people who like to put things in order. There used to be 4 recognized categories of forces:

1. The **Gravitational Force** is an attractive force (it only pulls, never pushes!) between masses. It is the weakest force, because the other types can overcome it, but it is the farthest reaching force. The sun, 93 million miles away, exerts a significant force on the earth. We will learn all about this force in Unit 5.
2. The **Strong Nuclear Force** is a force that binds the deuterons of an atomic nucleus together. It is the strongest force known, but only acts when the deuterons are actually in contact, so it is the least far reaching. It is also an attractive only force. We learn about this force in more detail in the nuclear unit in Physics II.
3. The **Weak Nuclear Force** is the force that tries to rip the nucleus of an atom apart. It is weaker than the strong force, but is very strong, as it is the force that is displayed in a nuclear bomb. This is a repulsive force - it pushes, never pulls.
4. All other forces, which are the ones we most commonly deal with, are known as **Electromagnetic Forces**. Electromagnetic forces include electricity, magnetism, chemical bonds, muscular strength and friction, pretty much everything you normally think of that pushes and pulls. This type of force will be studied in many of the following units.

These categories have existed longer than our understanding of their causes, and so as our understanding changes, so does our categorization. We now understand the weak force to be caused by electromagnetic repulsion, and so some people ignore force category #3, saying it is a part of #4, and others attempt to combine the two categories, calling it the "Electro-weak" force. I tend to be in the first camp, partly because Electro-weak is such a lame name.

Another ancient concept is that of **inertia**. Inertia is a word that means laziness. Yeah - your favorite word! Anyway - in physics, it means that an object wants to keep moving like it's been moving. If it is standing still, it wants to stay standing still. If it is moving at 30 m/s north, it wants to continue moving at 30 m/s north. Examples of inertia to talk about tomorrow: OK city, car jacks, stop signs (both ways), CD's out the window, ice in drinks.

es todo para hoy