Physical Science Chapter 12 Notes

* Gravity is a force exerted by masses
	+ Masses attract each other
	+ *Gravity*: the force that objects exert on each other because of their masses
		- Greater mass results in greater force
			* If the mass is large, it will produce a greater force on the smaller mass
		- Greater distance results in smaller force
			* If the distance between the two masses is large, the force between those two masses will be small
* Gravity on Earth
	+ The force of gravity acts on all masses equally
	+ Gravity has the same acceleration on all masses
	+ Downward pull
	+ *g =* 9.8 m/sq. second
		- *Gravitational constant*
		- Formula for calculating the force due to gravity on a mass close to Earth’s surface is F=m*g*
* Weight- the force of gravity on an object
	+ Depends on the force of gravity acting on the object
* Gravity keeps objects in orbit
	+ *Orbit*: the elliptical path one body follows around another body due to the influence of gravity
		- Objects are held in motion by centripetal force
* Friction is a force that opposes motion
	+ Friction occurs when surfaces slide against each other
		- *Friction*: a force that resists the motion between two surfaces in contact
* Friction between two surfaces depends on the materials that make up the surfaces
* A larger force is needed to start something moving than to keep something moving
* Frictional force has a limit to how large it can be.
* The harder two surfaces are pushed together, the more difficult it is for the surfaces to slide over each other
* Friction depends on the total force pressing the surfaces together
* Friction between surfaces produces heat
	+ Rub your hands together… what happens?
	+ Increased speed of the molecules on the surface produces the warmth
* Motion through fluids produces friction
	+ *Fluid*: substance that can flow easily (gases and liquids)
	+ *Air resistance:* friction due to air
* Air resistance depends on surface area and the speed of an object
	+ An object with larger surface area contacts more molecules = greater air resistance
	+ Faster an object moves it contacts more molecules is a smaller amount of time = greater air resistance
* Pressure depends on force and area
	+ Pressure describes how a force is spread over an area
		- *Pressure*: a measure of how much force is acting on a certain area
			* Increased pressure may feel like the force has increased, but the force has stayed the same.
			* P = force / area P= F/A
			* Unit for pressure is the pascal (Pa) one pascal is the pressure exerted by one newton of force (1N)
* Pressure in fluids depends on depth
	+ Pressure that a fluid exerts depends on the density and the depth of the fluid
* Pressure in Air
	+ Changing elevation: air has weight, the more air there is above you, the greater the weight of that air
	+ Changing Density: air at the top of a column presses down on the air below it, farther down the column, the more weight
		- Air at lower elevations is more compressed so it is more dense
	+ Effects on pressure: pressure is exerted by individual molecules colliding with an object
	+ Denser air = more molecules = more collisions
		- Increase in collisions increases force and pressure exerted by air
* Pressure in Water
	+ Water molecules are very close together
	+ Water exerts more pressure than air because of different densities
	+ Some organisms have developed adaptations to combat the pressures at great depths