Science Study Guide Grade 4 2019

The Human Body

* The Muscular, Digestive, Nervous, Circulatory and Respiratory Systems
	+ Parts of each system and how they move/work
	+ Which system controls parts of the body
		- Nervous system- controls: jumping, blinking, throwing a ball, etc.
		- Skeletal system- protects organs, and helps move
		- Respiratory system- controls breathing, lungs expand to breathe
		- Digestive system- food provides energy: parts- esophagus, intestines, stomach
		- Circulatory system- Heart has 4 chambers, pumps blood to body, contracts and pushes blood into chambers
* Microscopes and Magnification
	+ Part of a microscope
		- Use diagram
		- At a short distance the convex lens refracts light to magnify the image
		- At a longer distance the convex lens refracts light to magnify and invert the image
	+ Objective lens- 4x, 10x, 40x
	+ Parts of the eye
		- Human eye can detect only a certain amount of detail
	+ Lens- Concave, convex
		- Lens differ by the way they are curved
		- Concave lens reduce the size of an objects image
		- Convex lens magnify the size of an objects image
		- Lens refract or bend light so the image appears different from the object
* Chemistry, Matter and Interactions
	+ Tools to measure liquid –
		- beaker, graduated cylinder
	+ Tools to measure matter-
		- triple beam balance, pan balance
	+ pH scale-
		- bases and neutrals
	+ Quantitative and Qualitative Properties
* Forms of Energy
	+ Potential and Kinetic energy
		- Potential energy of object increases as its mass increases
		- Kinetic energy of object increases as its mass increases
		- Potential energy decrease as kinetic energy increases
		- Potential energy increases as kinetic energy decreases
	+ Exothermic and Endothermic reactions
		- Endothermic reactions must absorb heat from their surrounding in order to take place
		- Exothermic reactions must release heat into their surroundings
		- Chemicals contain energy
	+ Sound energy
		- Sound energy travels through solids, liquids and gases as vibrations
		- Sound energy takes the form of a wave
		- Increasing the frequency of a sound wave increases the pitch of the sound wave
	+ Mechanical energy
		- Gravity is a form of potential energy
		- Chemical energy can be converted to mechanical energy
	+ Circuits
		- Circuits require conductors and energy sources
		- Electrical energy can be transformed into light energy and heat by a light bulb
		- A battery is a form of chemical potential energy and can be used to create an electrical current
		- A circuit must be complete for electrical energy to be converted from chemical potential energy