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