Name: _____

Energy and You: Chapters 17 and 20
Study Guide

Directions: Study this sheet with a parent/guardian for at least 30 minutes. Have him/her sign the back where it says "Extra Credit" and bring this back the day you take the test. I will add 5 points of extra credit to your test score.

Know the following vocabulary words and their definitions:

- Energy – the ability to cause matter to move or change; **the ability to do work**
- Kinetic Energy – the energy an object has because of its **motion**
- Potential energy – the energy that is **stored** in an object because of its position
- Chemical Energy – energy **stored in the arrangement** of atoms and molecules
- Radiant Energy – energy transmitted in the form of **electromagnetic waves**
- Thermal Energy – energy due to the **motion and the arrangement of molecules** in a substance
- Efficiency – the **relationship between effective work and waste** energy produced by a device or system

Know the following about Potential and Kinetic energy:

- You increase potential energy when you increase the height or weight of an object that is still.
- Kinetic energy and potential energy can be continuously changed from one to another and then back again. Examples of this constant change are a pendulum, a swing, a yo-yo, etc.

Know the following about the 5 Main Forms of Energy:

- Chemical, Electrical, Nuclear, Radiant, and Thermal (also Sound and Mechanical)
- Gasoline is an example of chemical energy.
- Electricity is the most common type of energy used in households. It is a secondary source of energy as it is produced by primary sources such as coal power plants and nuclear power plants.
- Running, clapping your hands, and riding your bike are examples of mechanical energy.

Know the types of energy each item uses/produces:

- Light bulb: Electrical → Radiant/Light → Thermal/Heat
- Match: Chemical → Radiant → Thermal (also Sound when the match ignites)
- Greenhouse: converts radiant energy into thermal energy.
- Radio: Electrical → Sound → Thermal
- If Anna does 20 push ups and then plays basketball:
    - She uses chemical energy – energy that her body obtained from food.
    - She converts that chemical energy into mechanical energy – the energy her body has when it is in motion.

Know the following facts for the test:

- Energy can be converted from one form to another.
- Energy does NOT have mass. It is NOT matter.
- 70% of a car's energy is wasted because it is not used to move it. It is changed into heat. This is true of most energy that is "lost" – it becomes thermal energy/heat.
- An electric powered car is NOT 100% efficient. In fact, nothing is 100% efficient – in any energy transformation some useful energy is converted into heat that cannot be used to do work.
- The Law of Conservation of Energy states that energy CANNOT be created or destroyed.

- Much of the energy on earth originally came from the sun.
- In 1908, Henry Ford introduced the Model T. This marked the beginning of the automobile age and the rapid increase in the demand for petroleum (used to make gasoline).

Know the types of energy sources available:

- Renewable – a resource that is in great abundance and is continually produced, such as wind or sunlight, and that can be replaced naturally if used wisely
- Nonrenewable – a resource, such as coal, oil, or natural gas, that can be used up faster than it can be replenished naturally

I studied this Study Guide with my child for at least 30 minutes.

x_____

(Parent/Guardian's Signature)