**Science Study Guide**

**Explain the relationship between energy and work.**

Energy is the ability to do work or to cause changes in matter while work is the transfer of energy to an object that causes the object to move in a direction of that force.

**Compare kinetic and potential energy.**

Kinetic energy is the energy of an object due to motion while Potential energy is stored energy based on the relative position within a stored object.

**Describe the different forms of energy and categorize each as kinetic or potential energy.**

Mechanical energy is the sum of an object's potential energy and kinetic energy. For example springs and gears are forms of mechanical energy Both

Chemical energy is the energy stored within the bonds of atoms and molecules. **Potential energy**

Sound energy is the movement of energy through objects or other things. **Both**

Thermal energy is heat. Kinetic energy

Nuclear energy is the energy within the nucleus of an atom. **Both**

Electrical energy is the movement of electrons. Lightning and electricity are examples. Potential energy

Elastic energy is energy due to the position of a stretched object like a rubber band. **Potential energy**

Light energy is a kind of **kinetic energy** with the power to make different kinds of light like red, yellow, green, and more.

**Describe an energy conversion.**

Energy conservation is like when you don’t use energy at all or conserve it. As it is said, energy can neither be created nor destroyed.

**Give examples of energy conversions for the different forms of energy.**

Chemical energy is energy stored in food or gas or the chemicals in batteries with lithium and other things. Heat energy is energy in the form of fire and a powerful hot signature like a stove when turning on how it feels hot.

**Explain how energy conversions make energy useful.**

Energy conservation can convert food into chemical energy to give fuel and power to our bodies. Also other examples are Heat, sound, gravitational potential energy, and more.

**Explain the role of machines in energy conversions.**

Machines can transfer energy from one object to another as they make work easier. Like in a handheld flashlight pressing the lever fasted transfers some of the energy and distributes it to other parts of the machine.

**Explain how energy is conserved within a closed system.**

Only one type of energy can be running through the closed system so it is conserved.

**Explain the law of conservation of energy.**

The law is energy can not be created nor destroyed

**Give examples of how thermal energy is always a result of energy conversion.**

It is because thermal energy is caused by electricity which gives off heat waves.

**Explain why perpetual motion is possible.**

Perpetual motion is possible because it is a machine that runs on a large source of power therefore it is possible