**Directed Reading: What Is Energy?**

**ENERGY AND WORK: WORKING TOGETHER**

**\_\_\_\_\_\_ 1.** What do you call the ability to do work?

**a.** movement **b.** energy **c.** power **d.** force

**\_\_\_\_\_\_ 2.** Work is a transfer of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**a.** power **b.** force **c.** movement **d.** energy

**\_\_\_\_\_\_ 3.** How is energy transferred when one object does work on another?

**a.** from the first object to the second object **c.** from the second object to the first object

**b.** from the first object to the first object **d.** from the second object to the second object

**\_\_\_\_\_\_ 4.** What units are used to express this energy transfer?

**a.** newton **b.** calorie **c.** joule **d.** watt

**KINETIC ENERGY**

**\_\_\_\_\_\_ 5.** Which of the following is the energy of motion?

**a.** potential energy **b.** mechanical energy **c.** kinetic energy **d.** gravitational energy

**\_\_\_\_\_\_ 6.** In the formula for kinetic energy, what does the *m* stand for?

**a.** more **b.** moving **c.** mass **d.** meter

**\_\_\_\_\_\_ 7.** When a moving object has a greater mass, what happens to its kinetic energy?

**a.** Its kinetic energy becomes greater. **c.** Its kinetic energy stays the same.

**b.** Its kinetic energy becomes less. **d.** Its kinetic energy stays the same and then less.

**\_\_\_\_\_\_ 8.** Speed has a greater affect on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ energy than mass does.

**a.** kinetic energy **b.** mechanical energy **c.** potential energy **d.** force energy

**\_\_\_\_\_\_ 9.** Why are car crashes more dangerous at higher speeds than at lower speeds?

**a.** Speed has a greater affect on potential energy than mass.

**b.** Mass has a greater affect on kinetic energy than speed.

**c.** Mass has a greater affect on mechanical energy than speed..

**d.** Speed has a greater affect on kinetic energy than mass.

**POTENTIAL ENERGY**

**\_\_\_\_\_\_ 10.** The energy an object has because of its position is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ energy.

**a.** kinetic energy **c.** gravitational potential energy

**b.** potential energy **d.** mechanical energy

**Gravitational Potential Energy**

**\_\_\_\_\_\_ 11.** When you use force against an object, what are you giving the object?

**a.** mechanical energy **c.** thermal energy

**b.** wind energy **d.** gravitational potential energy

**\_\_\_\_\_\_ 12.** When you lift an object, energy is transferred to the object, which gives the object \_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**a.** mechanical energy **c.** gravitational potential energy

**b.** wind energy **d.** thermal energy

**Calculating Gravitational Potential Energy**

**\_\_\_\_\_\_ 13.** What formula do you use to calculate gravitational potential energy?

**a.** GPE = kinetic energy/potential energy **c.**GPE = weight/height

**b.** GPE = kinetic energy X potential energy **d.** GPE = weight X height

**\_\_\_\_\_\_14.** The amount of gravitational potential energy that an object has depends on the object’s

**a.** height and circumference **c.** weight and energy

**b.** weight and height **d.** height and energy

**\_\_\_\_\_\_ 15.** The amount of force that you must use on an object to lift it is \_\_\_\_\_\_\_\_\_\_\_\_\_.

**a.** height **b.** weight **c.** speed **d.** energy

**\_\_\_\_\_\_ 16.** When the juggler moves the pin, what kind of energy is moved to the pin?

**a.** potential energy **c.** kinetic energy

**b.** gravitational potential energy **d.** mechanical energy

**\_\_\_\_\_\_ 17.** The juggler moves the pin with his hand and gives\_\_\_\_\_\_\_\_\_\_\_\_\_ energy to the pin.

**a.** potential energy **c.** kinetic energy

**b.** gravitational potential energy **d.** mechanical energy

**\_\_\_\_\_\_ 18.** As the juggler’s pin leaves his hand, the pin’s kinetic energy begins to change to \_\_\_\_\_\_\_\_ energy.

**a.** potential energy **c.** kinetic energy

**b.** gravitational potential energy **d.** mechanical energy

**\_\_\_\_\_\_19.** How can you tell that the kinetic energy is decreasing as the juggler’s pin moves upward?

**a.** The pin speeds up as it moves upward.

**b.** The pin slows down as it moves upward.

**c.** The pin speeds up as it moves downward.

**d.** The pin slows down as it moves downward.

**\_\_\_\_\_\_ 20.** How is the height of an object determined?

**a.** An object’s height reflects the energy of the object falling.

**b.** An object’s height reflects the mass of the object falling.

**c.** An object’s height reflects the speed at which the object falls.

**d.** An object’s height reflects how far the object has to fall.

**MECHANICAL ENERGY**

**\_\_\_\_\_\_ 21.**Which energy equals the total energy of motion and position?

**a.** mechanical energy **b.** kinetic energy **c.** potential energy **d.** moving energy

**\_\_\_\_\_\_ 22.** What formula do you use to find mechanical energy?

**a.** M E= potential energy + kinetic energy **c.**M E= potential energy + gravitational potential energy

**b.** M E= potential energy X kinetic energy **d.** M E= potential energy X gravitational potential energy

**OTHER FORMS OF ENERGY**

\_\_\_\_\_\_\_ **23.** How do particles move at higher temperatures when compared to particles at lower temperatures?

**a.** they move slower **c.** they move at the same speed

**b.** they move faster **d.** they move in circles

\_\_\_\_\_\_\_ **24.** What turns inside a generator to make energy at a power plant?

**a.** a loop **b.** a fan **c.** a magnet **d.** a ball

**\_\_\_\_\_\_ 25.** When you stretch a guitar string, what kind of energy does the string store?

**a.** kinetic energy **c.** light energy

**b.** potential energy **d.** nuclear energy

**\_\_\_\_\_\_ 26.** When you release a guitar string, what kind of energy makes the string vibrate?

**a.** kinetic energy **c.** light energy

**b.** potential energy **d.** nuclear energy

**\_\_\_\_\_\_ 27.** What form of energy can travel through a vacuum?

**a.** kinetic energy **c.** light energy

**b.** potential energy **d.** nuclear energy

**\_\_\_\_\_\_ 28.** What is the difference between fission and fusion?

**a.** Fission is when magnets turn inside loops of wire. Fusion is when particles vibrate.

**b.** Fusion is when magnets turn inside loops of wire. Fission is when particles vibrate.

**c.** Fission is when two or more nuclei join together. Fusion is when the nucleus of a large atom splits apart.

**d.** Fusion is when two or more nuclei join together. Fission is when the nucleus of a large atom splits apart.

**Match the correct definition with the correct term. Write the letter in the space provided. Some terms will not be used.**

**a.** sound energy **c.** nuclear energy **e.** electrical energy **g.** thermal energy

**b.** chemical energy **d.** light energy **f.** mechanical energy

\_\_\_\_\_\_**29.** energy caused by an object’s vibrations

\_\_\_\_\_\_**30.** energy that comes from changes in the nucleus of an atom

\_\_\_\_\_\_**31.** all of the kinetic energy due to random motion of particles that make up an object

\_\_\_\_\_\_**32.** energy of moving electrons

\_\_\_\_\_\_**33.** energy of a compound that changes as its atoms are rearranged

\_\_\_\_\_\_**34.** energy produced by the vibrations of electrically charged particles

**Read the words. Read the sentences. Fill in each blank with the word or phrase that best completes the sentence.**

1. fission **b.** potential energy **c.** fusion **d.**  matter

\_\_\_\_\_\_**35.** Chemical energy is a form of \_\_ \_\_energy because it depends on the position and arrangement of the atoms in a compound.

\_\_\_\_\_\_**36.** Unlike sound energy, light energy does not need to travel through \_\_\_\_\_\_\_\_\_.

\_\_\_\_\_\_**37.** A nuclear reaction called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ produces the sun’s light and heat.

\_\_\_\_\_\_**38.** The electrical energy at nuclear power plants is made by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.