Name Key Date Class

Content Practice A LESSON 1

Forms of Energy

Directions: *On each line, write the term from the word bank that correctly completes each sentence. Some terms may be used more than once or not at all.*

electrical	**energy**	**kinetic**	**mechanical**	**nuclear**
potential	**radiant**	**sound**	**thermal**	**work**

1. Energy due to motion is kinetic energy.
2. The amount of kinetic energy an object has depends on the object's speed and mass.
3. Energy that is stored in the nucleus of an atom is nuclear energy.
4. The ability to cause change is energy.
5. potential energy is stored energy.
6. Energy that is carried by an electric current is electrical energy.
7. Gravitational, elastic, and chemical are three forms of potential energy.
8. The transfer of energy that occurs when a force is applied over a distance is work.
9. Energy that is the total of the kinetic energy and potential energy in an object or group of objects is mechanical energy.
10. The energy of atoms and molecules in an object due to their motions is thermal energy.
11. Energy is the ability to do work.
12. Energy carried by electromagnetic waves is called radiant energy.

Name _____ Date _____ Class _____

Key Concept Builder Mincay **LESSON 1**

Forms of Energy

Key Concept What are potential and kinetic energy?

Directions: *Circle the object in each pair that has the most kinetic energy.*

1. a moving car **OR** a parked car
2. a fast-moving soccer ball **OR** a slow-moving soccer ball
3. a 1,500-kg car traveling 20 m/s **OR** a 1,500-kg car traveling 30 m/s
4. a 1,500-kg car traveling 15 m/s **OR** a 2,000-kg car traveling 15 m/s

Directions: *Answer each question or respond to each statement on the lines provided.*

5. **Explain** how you decided which objects above to circle.
Moving car is using potential energy - parked is not
Fast soccer ball uses more energy than slow
30 m/s is faster which means more motion energy
More Mass Means More Kinetic energy

6. What is the difference between kinetic energy and potential energy?
Kinetic - motion
potential - position

7. How could you increase an object's gravitational potential energy?
Raise the object to increase distance from the ground

8. Two objects are at the same height, but one has more gravitational potential energy. What else can you tell about the two objects?
They have different masses. Larger mass means more stored energy.

9. **Name** two types of actions that can result in an object storing elastic potential energy.
Stretching OR expanding

Name _____ Date _____ Class _____

Key Concept Builder LESSON 1

Forms of Energy

Key Concept What are different forms of energy?

Directions: *On each line, write the term from the word bank that matches the description correctly. Some terms may be used more than once, but only one term may be used per line.*

electrical **mechanical** **nuclear** **radiant** **sound** **thermal**

1. shooting a basketball mechanical
2. the total of the potential energy and kinetic energy in an object or group of objects mechanical
3. a phone ringing Sound
4. the energy of moving atoms thermal
5. Light is an example. Radiant
6. energy given off by the Sun Radiant
7. carried by an electric current electrical
8. Microwaves are an example. Radiant/electrical/~~sound~~?
9. Heat is the movement of this type of energy. thermal
10. energy that is stored in the nucleus of an atom nuclear
11. a radio playing Sound
12. an ocean wave mechanical
13. a microwave heating food thermal

Name _____ Date _____ Class _____

Lesson Quiz A LESSON 1

Forms of Energy

Multiple Choice

Directions: *On the line before each question or statement, write the letter of the correct answer.*

C 1. Energy is the ability to
- **A.** use gravity.
- **B.** hold objects.
- **C.** cause change.

B 2. A moving truck has more _____ energy than a parked truck.
- **A.** sound
- **B.** kinetic
- **C.** potential

C 3. A large truck parked on a hill has more _____ energy than a car parked next to it.
- **A.** sound
- **B.** kinetic
- **C.** potential

C 4. Which situation is an example of work?
- **A.** a person holding several tools
- **B.** a person sitting in a parked car
- **C.** a person hitting a pitched baseball

C 5. Which type of energy is the total energy of kinetic energy and potential energy in a system of objects?
- **A.** sound energy
- **B.** radiant energy
- **C.** mechanical energy

Matching

Directions: *On the line before each definition, write the letter of the term that matches it correctly. Each term is used only once.*

C 6. released when nuclei split

A 7. stored in a stretched rubber band

B 8. moves from warmer objects to cooler objects

E 9. used when your body moves

D 10. carried by electromagnetic waves

- **A.** elastic potential energy
- **B.** thermal energy
- **C.** nuclear energy
- **D.** radiant energy
- **E.** chemical energy

Name _____ Date _____ Class _____

Lesson Quiz B LESSON 1

Forms of Energy

Completion

Directions: *On each line, write the term that correctly completes each sentence.*

1. _____ can create sound and light and cause changes in the motion of objects.
2. As a ball rolls faster downhill, its kinetic energy increases.
3. A large boulder at the edge of a high cliff has more potential energy than a smaller boulder.
4. When you do work on an object, the energy of that object increases.
5. An object's mechanical energy is a combination of its kinetic energy and potential energy.

Short Answer

Directions: *Respond to each statement on the lines provided.*

6. Forms of energy include thermal, radiant, and nuclear. **Define** these three forms of energy.

thermal - Result of particle movement

Radiant - Result of electromagnetic waves

Nuclear - Splitting of atoms in nucleus

7. **Compare** and **contrast** chemical potential energy and elastic potential energy.

elastic potential - energy stored in stretchy things

Name _____ Date _____ Class _____

Content Practice A LESSON 2

Energy Transformations

Directions: *On each line, write the term from the word bank that correctly completes each sentence. Some terms may be used more than once.*

electrical	**energy transformation**	**friction**	**kinetic**
law of conservation of energy	**potential**	**radiant**	**thermal**

1. According to the law of conservation of energy, energy cannot be created or destroyed.

2. A change from electrical energy to radiant energy to thermal energy is called a(n) energy transformation.

3. A force that resists the sliding of one surface over another is friction.

4. A microwave oven changes electrical energy to radiant energy to thermal energy.

5. Suppose you are shooting a basketball toward a hoop. As the ball rises in the air, its kinetic energy increases and its potential decreases.

6. As the ball falls back toward the floor, its potential energy increases and its kinetic decreases.

7. Friction transforms some mechanical energy into thermal energy.

8. You use a lamp to change electrical energy into radiant energy.

9. When you use a battery, you transform chemical energy stored in the battery to electrical energy.

10. The exhaust from a car contains thermal energy that cannot be used. Scientists often refer to this energy that cannot be used as waste energy.

Name _____ Date _____ Class _____

Lesson Quiz A LESSON 2

Energy Transformations

Multiple Choice

Directions: *On the line before each question or statement, write the letter of the correct answer.*

C 1. An energy _____ occurs when energy changes from one type to another type.
- **A.** increase
- **B.** conversion
- **C.** transformation

C 2. What happens to potential energy when a ball is tossed into the air?
- **A.** It never changes.
- **B.** It increases as the ball approaches its highest point.
- **C.** It decreases as the ball approaches its highest point.

A 3. According to the law of conservation of energy, energy cannot
- **A.** be created or destroyed.
- **B.** transferred from one region to another.
- **C.** transformed from one form into another.

B 4. When a ball is thrown into the air, its kinetic energy is lowest
- **A.** at its highest point.
- **B.** at the moment it is released.
- **C.** as it begins to fall back to the ground.

A 5. What type of energy transformation occurs during photosynthesis?
- **A.** Radiant energy becomes chemical energy.
- **B.** Thermal energy becomes chemical energy.
- **C.** Nuclear energy becomes mechanical energy.

Matching

Directions: *On the line before each definition, write the letter of the term that matches it correctly. Each term is used only once.*

E 6. transforms gravitational potential energy into kinetic energy

C 7. transforms mechanical energy into thermal energy

D 8. transforms radiant energy into sound energy

A 9. force that reduces kinetic energy and produces heat

B 10. reduces friction's creation of thermal energy

- **A.** friction
- **B.** lubricant
- **C.** electric heater
- **D.** cell phone
- **E.** a marble falling off a table

Name _____ Date _____ Class _____

Lesson Quiz B LESSON 2

Energy Transformations

Completion

Directions: *On each line, write the term that correctly completes each sentence.*

1. The changes from electrical energy to radiant energy to thermal energy are energy transformations
2. The Kinetic energy of a ball being tossed into the air increases as the ball rises.
3. According to the law of conservation of energy, energy can be Changed but not destroyed/created
4. When a ball is thrown into the air, its potential energy is lowest at the top of its arc.
5. During photosynthesis, a plant changes radiant energy into chemical energy.

Short Answer

Directions: *Respond to each statement on the lines provided.*

6. **Describe** the way friction transforms energy and the way friction can be reduced.
friction converts energy into thermal energy
lubricants can Reduce friction

7. **Show** how the law of conservation of energy is proved to be accurate by the energy changes that happen when an object falls from a table to the floor.

8. **List** examples of two energy transformations—one produced by an electric heater and the other by a mobile phone.