Lesson 17.1: True or False

Name_____ **Class**_____ **Date**_____

Determine if the following statements are true or false.

_____ 1. Most forms of energy can also be classified as kinetic or potential energy.

_____ 2. If the mass of an object doubles, its kinetic energy is only half as great.

_____ 3. Kinetic energy and velocity have an inverse relationship.

_____ 4. Clothes hanging motionless on a clothesline do not have any energy.

_____ 5. Changing the shape of an elastic material gives it potential energy.

_____ 6. If you double the weight of an object, its gravitational potential energy also doubles.

_____ 7. The higher above the ground you are, the less gravitational potential energy you have.

_____ 8. The energy of a child on a swing changes back and forth between kinetic and potential energy.

_____ 9. Some of the kinetic energy of the child in question 8 is given off as heat.

_____ 10. Energy conversions are always permanent changes in energy.

Lesson 17.1: Critical Reading

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Name_____ **Class**_____ **Date**_____

Read this passage from the text and answer the questions that follow.

Energy Conversion

When you stand on a diving board high above a swimming pool, you have gravitational potential energy. That's because you have the potential to fall toward Earth due to gravity. What happens when you jump off the diving board? Your gravitational potential energy changes to kinetic energy as you fall toward the water. However, you can regain your potential energy by getting out of the water and climbing back up to the diving board. This requires an input of kinetic energy. These changes in energy are examples of energy conversion, the process in which energy changes from one type or form to another. Energy conversion between potential and kinetic energy also occurs when you swing on a playground swing or jump on a trampoline.

The law of conservation of energy applies to energy conversions. Energy is not used up when it changes form. However, some energy may be used to overcome friction, and this energy is usually given off as heat. For example, your kinetic energy at the bottom of a dive is the same as your potential energy when you were on the diving board, except for a small amount of heat resulting from friction with the air as you fell.

Questions:

What is energy conversion?

Describe how kinetic and potential energy change as a diver climbs up to a diving board and then dives into the water below.

How does the law of conservation of energy apply to these energy conversions?

Lesson 17.1: Multiple Choice

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Name_____ **Class**_____ **Date**_____

Circle the letter of the correct choice.

The ability to cause a change in matter is one definition of

work.

force.

energy.

motion.

Forms of energy include

mechanical energy.

electrical energy.

chemical energy.

all of the above

What is the kinetic energy of an object that has a mass of 10 kg and a velocity of 1 m/s?

100 J

10 J

5 J

1 J

What is the gravitational potential energy of an object that has a weight of 12 N and is 3 m above the ground?

108 J

36 J

15 J

4 J

Which statement is false about objects with kinetic energy?

They are in motion.

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They are doing work.

They are moving matter over a distance.

They are using up their energy by moving.

The SI unit for energy is the

joule.

newton.

newton • meter.

two of the above

Which type(s) of energy does a person have when jumping on a trampoline?

kinetic energy

elastic potential energy

gravitational potential energy

all of the above

Lesson 17.1: Matching

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Name_____ **Class**_____ **Date**_____

Match each definition with the correct term.

Definitions

_____ 1. energy stored in an object because of its position or shape

_____ 2. stored energy due to an object's shape

_____ 3. use of force to move matter

_____ 4. energy of moving matter

_____ 5. stored energy due to an object's position

_____ 6. ability to do work

_____ 7. process in which energy changes from one type or form to another

Terms

a. energy

b. kinetic energy

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c. energy conversion

d. work

e. gravitational potential energy

f. elastic potential energy

g. potential energy

Lesson 17.1: Fill in the Blank

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Name_____ **Class**_____ **Date**_____

Fill in the blank with the appropriate term.

When work is done, _____ is transferred from one object to another.

The two basic types of energy are kinetic energy and _____ energy.

Anything that is moving has _____ energy.

The amount of kinetic energy in an object depends on its mass and _____.

Gravitational potential energy depends on an object's height above the ground and its _____.

When energy changes form, the total amount of energy is always _____.

Stretching a rubber band gives it _____ potential energy.

Lesson 17.1: Critical Writing

Name_____ Class_____ Date_____

Thoroughly answer the question below. Use appropriate academic vocabulary and clear and complete sentences.

Explain why an object with kinetic energy always does work.

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