

	<b>MID SEMESTER EXAMINATION FIRST SEMESTER REVISION BOOKLET</b>
	<b>Grade: 9</b>
<b>AY 2018 - 2019</b>	<b>Subject: Science</b>
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## ***Position and Motion***

### **True or False**

**Directions:** *On the line before each statement, write T if the statement is true or F if the statement is false.*

- \_\_\_\_\_ 1. When you describe a position, you must only specify a distance.
- \_\_\_\_\_ 2. Directing someone to walk north and west is describing a position in two dimensions.
- \_\_\_\_\_ 3. Whether motion occurs depends on the reference point you use.
- \_\_\_\_\_ 4. Displacement does not require movement.

### **Multiple Choice**

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

- \_\_\_\_\_ 8. Which is a reference direction?
- A. faster
- B. the street
- C. to the north
- \_\_\_\_\_ 9. Which statement indicates that motion has occurred?
- A. The reference point has changed.
- B. The position of the object has changed.
- C. The object being described has changed.

## ***Position and Motion***

### **Completion**

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

1. When describing position, you must give \_\_\_\_\_ and \_\_\_\_\_ from a reference point.
2. "The house is one block east and one block south of here" is a set of directions in two \_\_\_\_\_.
3. You must have a(n) \_\_\_\_\_ point to determine whether motion has occurred.

4. Distance equals displacement only when motion is in \_\_\_\_\_ direction.
5. The process of changing position is \_\_\_\_\_.
6. When describing an object's position, the reference direction is a(n) \_\_\_\_\_ number.
7. Movement in the direction opposite the reference direction is a(n) \_\_\_\_\_ number.

## Short Answer

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

8. **Explain** how a reference point is used to give directions to a location.

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9. **Compose** two sentences that explain how the reference point and position of an object are affected when the object moves.

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## Speed and Velocity

### True or False

**Directions:** On the line before each statement, write T if the statement is true or F if the statement is false.

- \_\_\_\_\_ 1. The velocity of an object is the same as its speed.
- \_\_\_\_\_ 2. A car's speedometer indicates its instantaneous speed.
- \_\_\_\_\_ 3. When speed is changing, the line representing the motion on a distance-time graph is straight.

### Multiple Choice

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

- \_\_\_\_\_ 7. What can you tell about the motion of an object represented by a curved line on a distance-time graph?
- A. The object is not moving.
  - B. The object's speed is not constant.
  - C. The object is moving at a constant speed.
- \_\_\_\_\_ 8. Which variable is **NOT** a part of an object's velocity?
- A. mass
  - B. speed

C. direction

- \_\_\_\_\_ 9. If two objects are represented on a distance-time graph, which object is moving faster?
- A. the object represented by the longest straight line
  - B. the object represented by the shortest straight line
  - C. the object represented by the steepest straight line

## Speed and Velocity

### Completion

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

1. The velocity of an object is its speed and its \_\_\_\_\_ of motion.
2. A car's speedometer indicates its \_\_\_\_\_ speed.
3. The speed of an object in motion can be illustrated on a(n) \_\_\_\_\_ graph.
4. When speed is changing, the line representing the motion on a distance-time graph is a(n) \_\_\_\_\_.
5. When an arrow represents velocity, the \_\_\_\_\_ of the arrow shows the distance the object travels.
6. The \_\_\_\_\_ of an object is calculated by dividing the distance traveled by the total time needed to travel that distance.

### Short Answer

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

7. **Contrast** the way an object that is speeding up and one that is slowing down is shown on a distance-time graph.

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8. **Assess** how the velocity of an object could change even if its speed remained constant.

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9. **Determine** how you could use a distance-time graph to calculate the average speed of an object in motion.

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**Chapter: 2**

**Key Concept: Force, friction and laws of motion.**

**Directions:** *In the box below, draw arrows showing a positive force of 400 N and a negative force of 200 N. Use “to the right” as the reference direction. Then write the net force on the line provided.*

1. net force: \_\_\_\_\_



**Directions:** *Answer each question on the lines provided.*

2. How much force would be needed to balance the force represented by the two arrows in the diagram above?

\_\_\_\_\_

3. What are balanced forces? What are unbalanced forces?

\_\_\_\_\_  
\_\_\_\_\_

4. What is Newton’s first law of motion?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

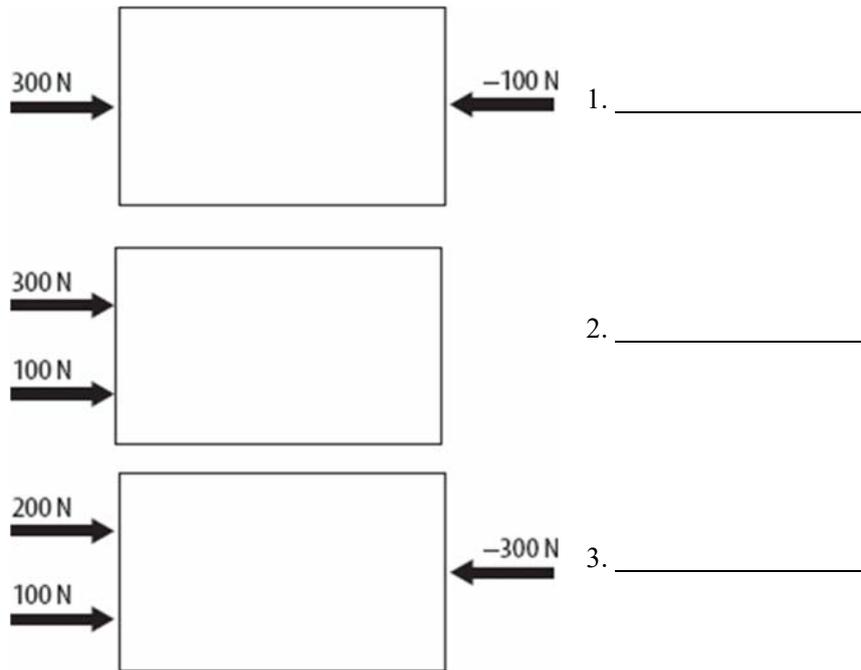
5. What is inertia?

\_\_\_\_\_

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**Key Concept** How is motion related to balanced and unbalanced forces?

**Directions:** The diagrams below represent sliding forces applied to a large box. Write the net force applied to each box on the line next to each diagram.



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

4. Because forces have directions, you must specify a(n) \_\_\_\_\_ when you combine forces.
5. A force exerted in that direction is \_\_\_\_\_, and a force exerted in the opposite direction is \_\_\_\_\_.
6. The combination of forces acting on an object is the \_\_\_\_\_.

**Short Answer**

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

7. Two people apply force to object A. Each person applies a force of 20 N. Two different people apply a force to object B. Each of them also applies a force of 20 N. However, the net force acting on object A is different from the net force acting on object B. **Determine** what happened.

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**8. Explain** why a crash-test dummy falls forward when the car it is in crashes head on or stops suddenly.

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**9. Predict** what would happen to an object that is at rest if balanced forces acted upon it.

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**10. Calculate** the net force acting on an object if the reference direction is to the left, a force of 65 N acts on the object to the left, and a force of 90 N acts on the object to the right. Explain your calculations.

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## ***Types of Energy***

### **True or False**

**Directions:** *On the line before each statement, write T if the statement is true or F if the statement is false. If the statement is false, change the underlined word to make it true. Write your changes on the lines provided.*

\_\_\_\_\_ **1.** Energy is the ability to cause movement. \_\_\_\_\_

\_\_\_\_\_ **2.** Anything in motion has potential energy. \_\_\_\_\_

\_\_\_\_\_ **3.** Thermal energy is the sum of the kinetic energy and potential energy of the particles that make up an object. \_\_\_\_\_

\_\_\_\_\_ **4.** The Sun's energy is transmitted to Earth through electromagnetic waves.

## ***Types of Energy***

### **Short Answer**

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

**1. Compare** mechanical energy and thermal energy.

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**2. Show** the connection between the concepts of fuel and energy.

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**3. Identify** examples of kinetic energy and gravitational potential energy.

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## Matching

**Directions:** *On the line before each definition, write the letter of the term that matches it correctly. Not all terms are used.*

- |                                                                        |                                  |
|------------------------------------------------------------------------|----------------------------------|
| _____ <b>4.</b> energy transferred through the ground                  | <b>A.</b> chemical energy        |
| _____ <b>5.</b> energy stored and released from the nucleus of an atom | <b>B.</b> electric energy        |
| _____ <b>6.</b> energy stored in the bonds between atoms               | <b>C.</b> electromagnetic energy |
| _____ <b>7.</b> energy carried by electromagnetic waves                | <b>D.</b> radiant energy         |
|                                                                        | <b>E.</b> seismic energy         |
|                                                                        | <b>F.</b> sound energy           |
|                                                                        | <b>G.</b> nuclear energy         |



## ***Energy, Work, and Simple Machines***

### **Multiple Choice**

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

- \_\_\_\_\_ 1. Energy must have the ability to cause  
A. heat.  
B. change.  
C. motion.
- \_\_\_\_\_ 2. The energy carried by the electromagnetic waves that operate radios and microwave ovens is  
A. radiant energy.  
B. mechanical energy.  
C. geothermal energy.
- \_\_\_\_\_ 3. Which transformation occurs when you turn on an electric lamp?  
A. Light energy becomes sound energy.  
B. Electric energy becomes light energy.  
C. Thermal energy becomes electric energy.
- \_\_\_\_\_ 4. Which activity uses energy to do work?  
A. walking  
B. sleeping  
C. standing
- \_\_\_\_\_ 5. A simple machine does work with  
A. no energy.  
B. one movement.  
C. an electric current.
- \_\_\_\_\_ 6. Which simple machine combines an inclined plane and a cylinder?  
A. a lever  
B. a screw  
C. a wedge
- \_\_\_\_\_ 7. A hammer exerts which type of force in relation to the hand using it?  
A. a faster force  
B. a stronger force  
C. an opposite force



## Completion

Directions: On each line, write the term that correctly completes each sentence. Each term is used only once.

energy transformation

kinetic energy

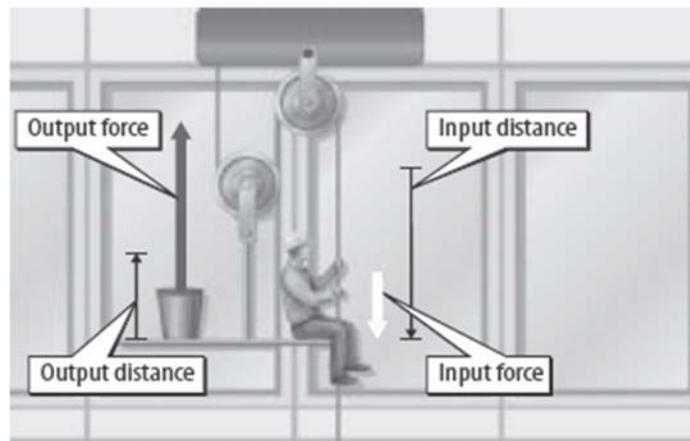
potential energy

work

8. \_\_\_\_\_ is the transfer of energy that occurs when force makes an object move.
9. \_\_\_\_\_ is the conversion of energy into a different form.
10. \_\_\_\_\_ is the energy that an object has in motion.
11. \_\_\_\_\_ is the stored energy that depends on the interaction of objects.

## Interpreting a Diagram

Directions: Use the diagram to respond to each statement.



12. Name the simple machine in the diagram.

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13. Interpret the diagram to compare the input force and output force. Then compare the input distance and output distance.

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## Short Answer

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

**14. Describe** one way in which chemical energy is used.

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**15. State** the law of conservation of energy.

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**16. List** some ways in which radiant energy is used.

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## Concept Application

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

**17. Identify** a tool made from a common simple machine and describe how it makes work easier.

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**18. Write** a short paragraph that describes how energy is transformed as you ride up and down the hills of a roller coaster.

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## Energy, Work, and Simple Machines

### Multiple Choice

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

- \_\_\_\_\_ 1. The sum of potential energy and kinetic energy in a system of objects is
- A. total energy.
  - B. systematic energy.
  - C. mechanical energy.
  - D. gravitational potential energy.
- \_\_\_\_\_ 2. Which data could be obtained from a simple machine using Newton's second law of motion?
- A. work
  - B. force
  - C. efficiency
  - D. acceleration

### Completion

**Directions:** On each line, write the term from the word bank that correctly completes each sentence. Not all terms are used.

chemical energy	energy transformation	kinetic energy	nuclear energy
potential energy	seismic energy	sound energy	work

3. \_\_\_\_\_ is the transfer of energy that occurs when force makes an object move.
4. \_\_\_\_\_ is the conversion of energy into a different form.
5. \_\_\_\_\_ is the energy that an object has in motion.
6. \_\_\_\_\_ is the stored energy that depends on the interaction of objects.
7. \_\_\_\_\_ is the energy transferred by waves moving through the ground.
8. \_\_\_\_\_ is energy that is stored in and released from the bonds between atoms.



## Light

### Multiple Choice

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

- \_\_\_\_\_ 1. Light travels in \_\_\_\_\_ waves.  
A. transverse  
B. mechanical  
C. electromagnetic
- \_\_\_\_\_ 2. Color depends on the \_\_\_\_\_ of visible light.  
A. speed  
B. direction  
C. wavelength
- \_\_\_\_\_ 3. When you see an object that is not a light source, you are seeing light waves \_\_\_\_\_ by the object.  
A. reflected  
B. absorbed  
C. refracted
- \_\_\_\_\_ 4. If a material allows most light that strikes it to pass through but forms a blurry image, then the material is  
A. opaque.  
B. reflective.  
C. translucent.
- \_\_\_\_\_ 5. The change in direction of light waves when they pass from one material to another is  
A. scattering.  
B. refraction.  
C. absorption.



## Light

### Completion

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

1. Sound waves are longitudinal waves, and light waves are \_\_\_\_\_ waves.
2. The color you see depends on the \_\_\_\_\_ of the light waves that reach your eyes.
3. To see an object that is not a light source, it must \_\_\_\_\_ light to your eye.
4. If an object is \_\_\_\_\_, it allows some light to pass through it, but it forms a blurry image.
5. When light waves change direction as they travel from one material to another, \_\_\_\_\_ occurs.

### Short Answer

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

6. **Explain** what determines color.

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7. **Contrast** the frequency and wavelength of gamma rays with the frequencies and wavelengths of other waves on the electromagnetic spectrum.

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8. **Determine** the type of electromagnetic wave that can cause skin damage and identify the damage it can cause.

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9. **Write** one example of how we use microwaves.

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