

Name _____ Period _____

Forces • Reading/Notetaking Guide

What Is a Force? (pp. 374–375)

- In science, a force is _____.
- When one object pushes or pulls another object, the first object is _____ a force on the second object.
- Circle the letters of the two ways that forces are described.
 - direction
 - velocity
 - strength
 - acceleration
- The SI unit used to measure the strength of a force is the _____.

Combining Forces (pp. 375–377)

- The overall force on an object after all the forces are added together is called the _____.
- When two forces act in the same direction, they are _____ together.
- Adding a force acting in one direction to a force acting in the opposite direction is the same as adding a(n) _____ number and a(n) _____ number.
- Unbalanced forces can cause an object to change its motion in three ways. What are they?

- Is the following sentence true or false? Unbalanced forces acting on an object will change the object's velocity. _____
- Equal forces acting on one object in opposite directions are called _____.
- Is the following sentence true or false? Balanced forces acting on an object will change the object's velocity. _____
- When you add equal forces exerted in opposite directions, there is no _____.

HW #6

___/20

Forces • Review and Reinforce

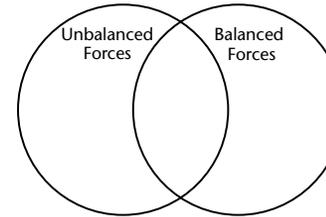
The Nature of Force

Understanding Main Ideas

Write the phrases listed below in the Venn diagram. Write the characteristics shared by unbalanced and balanced forces in the area of overlap.

- | | |
|----------------------------------|----------------------------|
| change an object's motion | push or pull |
| do not change an object's motion | have direction |
| net force = 0 | net force does not equal 0 |

1.



Answer the following question in the space below.

- Describe how to combine unequal forces acting in opposite directions.

Building Vocabulary

Match each term with its definition by writing the letter of the correct definition in the right column on the line beside the term in the left column.

- | | |
|--------------------------|--|
| ___ 3. newton | a. the SI unit for force |
| ___ 4. force | b. sum of all forces acting on an object |
| ___ 5. unbalanced forces | c. push or pull |
| ___ 6. balanced forces | d. can change an object's motion |
| ___ 7. net force | e. will not change an object's motion |



The Nature of Force

Key Concepts

- How is a force described?
- How do balanced and unbalanced forces affect an object's velocity?

A **force** is a push or a pull. **A force is described by its magnitude and by the direction in which it acts.** The strength of a force is measured using the SI unit called the **newton**, named for Isaac Newton, an English mathematician. Picking up a small lemon requires you to exert a force of about one newton. Forces can be shown using arrows. The length of the arrow represents the size of the force, and the direction of the arrow shows the direction of the force.

The overall force on an object, called the **net force**, is found by combining all of the forces acting on the object. The size of the net force determines whether the object's motion changes. The direction of the net force determines the direction of the object's motion. When two forces act in the same direction, the net force is found by adding the strengths of the individual forces. When forces act in opposite directions, they are combined by subtracting the smaller force from the larger force. The direction of the resulting force is the direction of the larger original force.

When there is a net force acting on an object, the forces are said to be unbalanced. **Unbalanced forces** can cause the velocity of an object to change. It can speed up, slow down, or change direction. **Unbalanced forces acting on an object result in a net force and cause a change in the object's velocity.**

Equal forces acting on one object in opposite directions are called **balanced forces**. **Balanced forces acting on an object do not change the object's velocity.** When equal forces are exerted in opposite directions, there is no net force.

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3. Then, use the following information to get started in your science classroom:
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5. Your child's **password: canyon1**
6. Note: User name and password are case sensitive
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