

Review and Reinforce

The Nature of Force Read pp. 32-35

Understanding Main Ideas

In the Venn diagram, write the phrases listed below to describe unbalanced forces and balanced forces. Write the characteristics shared by unbalanced and balanced forces in the area of overlap.

change an object's motion

push or pull

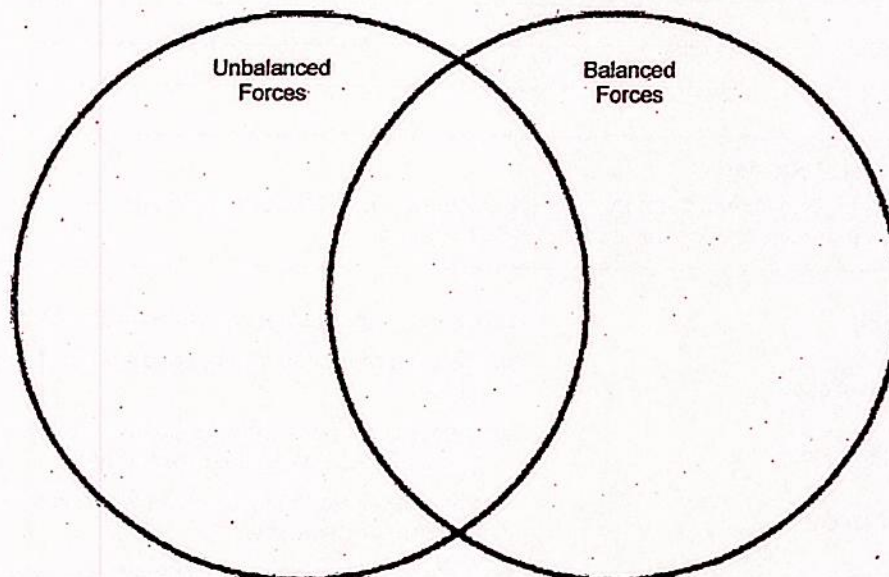
do not change an object's motion

have direction

net force = 0 N

net force does not equal 0 N

1.



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.

2. ____ newton

a. the SI unit for force

3. ____ force

b. sum of all forces acting on an object

4. ____ balanced forces

c. push or pull

5. ____ unbalanced forces

d. can change an object's motion

6. ____ net force

e. will not change an object's motion

Review and Reinforce

Friction and Gravity

Read pp. 36- 43

Understanding Main Ideas

Answer the following questions in the spaces provided.

1. What are the two factors that affect the frictional force between two surfaces? _____

2. What two factors affect the gravitational force between two objects? _____

3. How does mass differ from weight? _____

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.

- | | |
|--------------------------|--|
| 4. ____ friction | a. the force that pulls objects toward each other |
| 5. ____ rolling friction | b. the type of friction that exists between oil and a door hinge |
| 6. ____ sliding friction | c. the force that one surface exerts on another when two surfaces rub against each other |
| 7. ____ fluid friction | d. the type of friction that occurs when you rub sandpaper against wood |
| 8. ____ static friction | e. the type of friction that occurs when a wheel turns on a surface |
| 9. ____ weight | f. a measure of the force of gravity on an object |
| 10. ____ gravity | g. the type of friction that occurs between objects that aren't moving |

Review and Reinforce

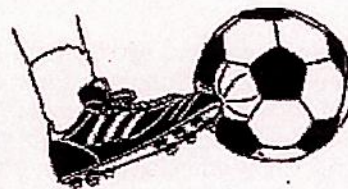
Newton's Laws of Motion Read pp. 44-51

Understanding Main Ideas

Answer the following questions in the spaces provided. Use a separate sheet of paper if you need more room.

1. Newton's second law of motion describes the relationship among force, mass, and acceleration. Write the equation.

2. How does the diagram at the right illustrate Newton's third law of motion?



If the statement is true, write *true*. If the statement is false, change the underlined word or words to make the statement true.

3. _____ If you increase the force on an object, its acceleration increases.
4. _____ If you increase the mass of an object, its acceleration decreases.
5. _____ To accelerate a 3 kg skateboard at 9 m/s^2 , a force of 3 newtons is needed.
6. _____ The amount of inertia an object has depends on its speed.

Building Vocabulary

Write a definition for the term on the lines below.

7. inertia

Review and Reinforce

Momentum

Read pp. 52-55

Understanding Main Ideas

Answer the following questions in the spaces provided.

1. What does it mean to say that momentum is *conserved*?

2. What is the momentum of a 20-kg dog running at a speed of 8 m/s?

3. Suppose you have two toy cars. Each has a mass of 0.04 kg. The cars have tape on their bumpers that will cause them to stick together. One car is stopped on the track. The other car, traveling at a velocity of 4 m/s, hits the first car. What is the momentum of the coupled cars? Show your calculations, and explain your answer.

Building Vocabulary

Write a definition for each of these terms on the lines below.

4. momentum

5. law of conservation of momentum

Review and Reinforce

Free Fall and Circular Motion

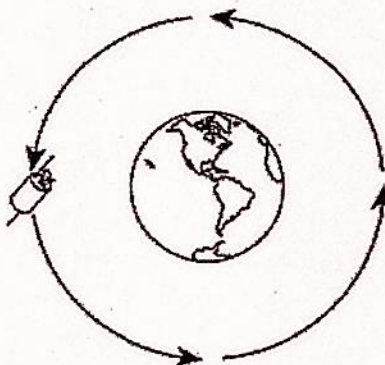
Read pp. 56-59

Understanding Main Ideas

Answer the following questions in the spaces provided.

1. What is the only force acting on an object in free fall? _____

2. Draw an arrow representing centripetal force in the diagram below.



Building Vocabulary

Fill in the blank to complete each statement.

3. In _____, an object falling from the top of a building accelerates at 9.8 m/s^2 .
4. A(n) _____ follows a curved path in space around Earth.
5. _____ causes an object to move in a circular path.
6. Together, satellites and ground receivers enable people using _____ to pinpoint their geographic location.

