

Review and Reinforce

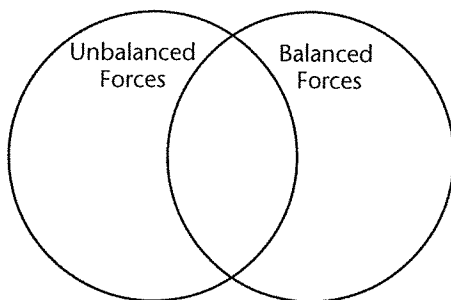
The Nature of Force

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 |

Place the outside corner, the corner away from the dotted line, in the corner of your copy machine to copy onto letter-size paper.

Review and Reinforce

Friction and Gravity

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

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

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

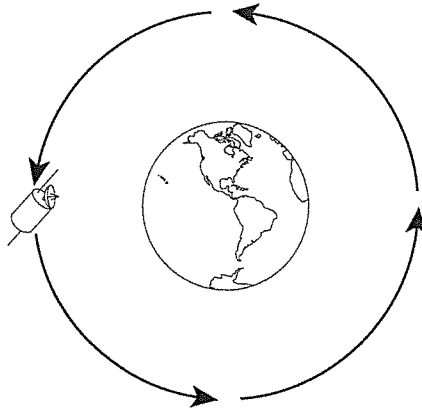
Free Fall and Circular Motion

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.

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