Name _____ Class _____ Date _____

SECTION
2-1 What is Force?

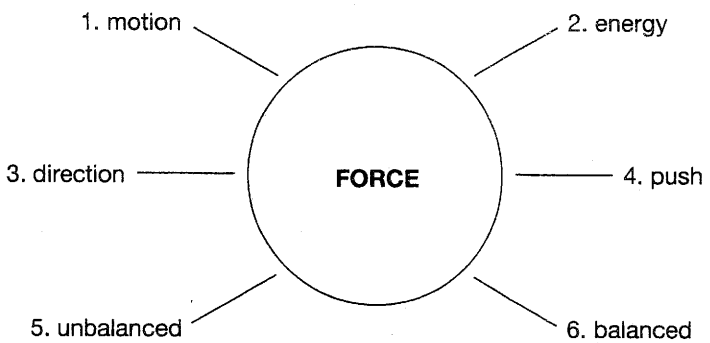
(pages 36–38)

KEY CONCEPTS

- A force is a push or a pull.
- A force gives energy to an object, sometimes causing it to start moving, stop moving, or change directions.

Building Vocabulary Skills: Expanding Definitions

For each numbered term, write a sentence that relates it to the word in the center of the circle.



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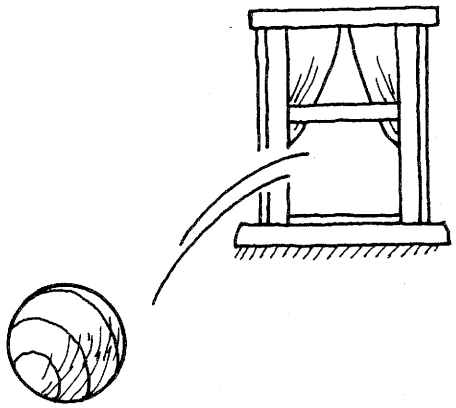
Identifying Forces: Understanding the Main Ideas

Identify the forces acting in each of the following situations. Then describe the effect of the forces.



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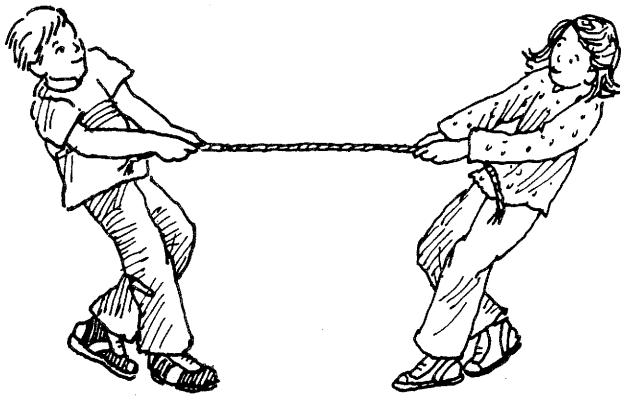

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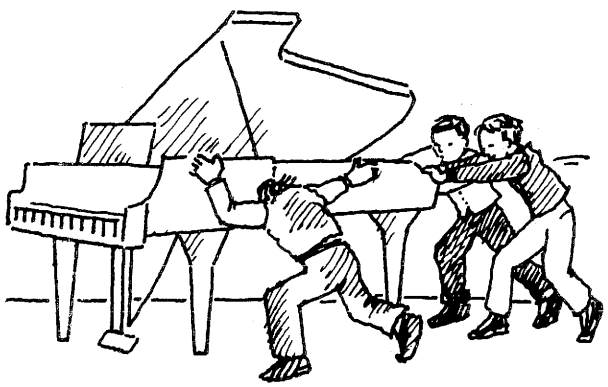

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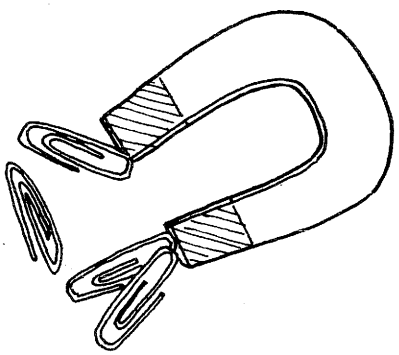

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Name _____ Class _____ Date _____

SECTION 2-2 **Friction: A Force Opposing Motion** *(pages 38–40)*

KEY CONCEPTS

▲ Friction will cause a moving object to slow down and finally stop.

Building Vocabulary Skills: Applying Definitions

Use the words in each group to write a sentence that describes friction. Make sure that each sentence includes the word friction.

1. direction: motion

2. surfaces: touching

3. amount: surfaces: materials

4. sliding: solid

5. wheels: ball bearings: rolling

6. fluid: liquid: gas

Forces of Friction: Understanding the Main Ideas

On each picture, draw an arrow to show the direction of the frictional force. Then name the type of friction—sliding, rolling, or fluid—that is acting in each case.

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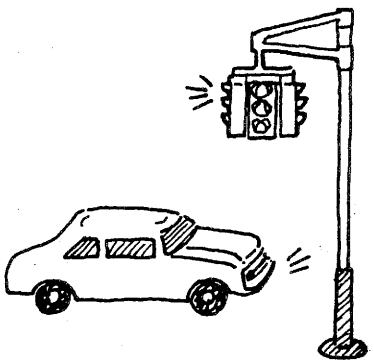

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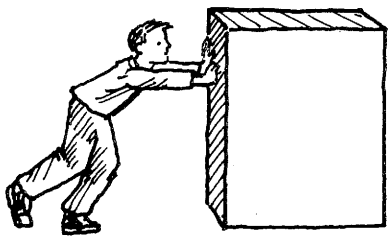

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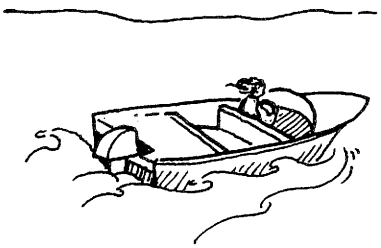

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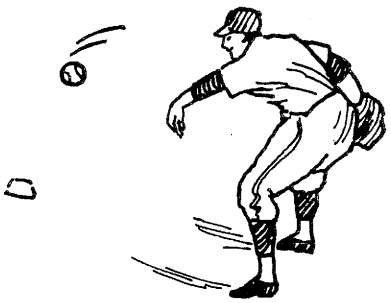

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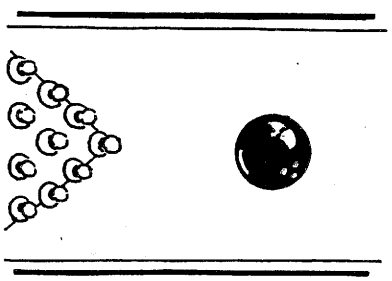

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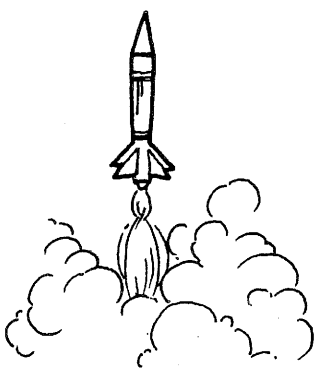

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Name _____ Class _____ Date _____

SECTION
2-3 Newton's Laws of Motion

(pages 41–47)

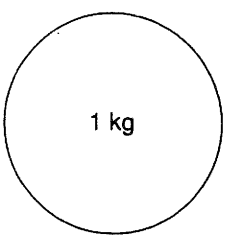
KEY CONCEPTS

- The first law of motion states that an object at rest will remain at rest and an object in motion will remain in motion at constant velocity unless acted upon by an unbalanced force.
- Newton's second law of motion shows how force, mass, and acceleration are related.
- The third law of motion states that for every action, there is an equal and opposite reaction.

Building Vocabulary Skills: Exploring Definitions

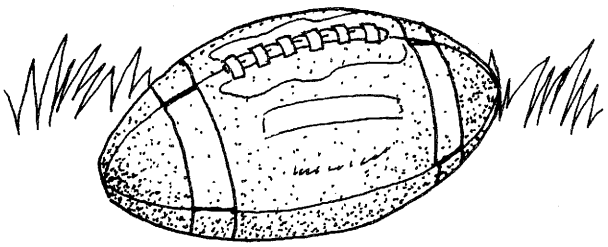
1. Explain how the word **inertia** is related to its Latin root word *iners*, which means idle or lazy.

2. In the space below, draw a diagram to show the meaning of the term **newton**. Use the 1-kg mass in your drawing. Then write a definition of the term newton.



Newton's Laws: Using the Main Ideas

Look carefully at the illustrations below. Decide which of Newton's laws is illustrated in each example. Then explain how the situation illustrates the law.



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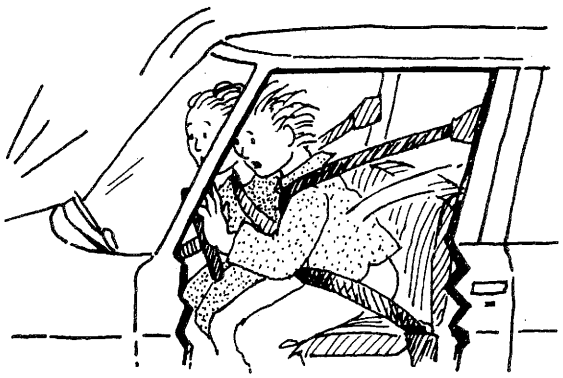

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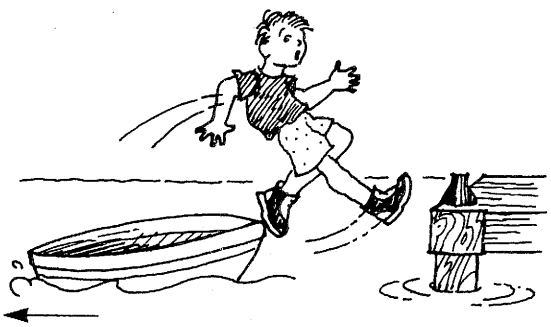

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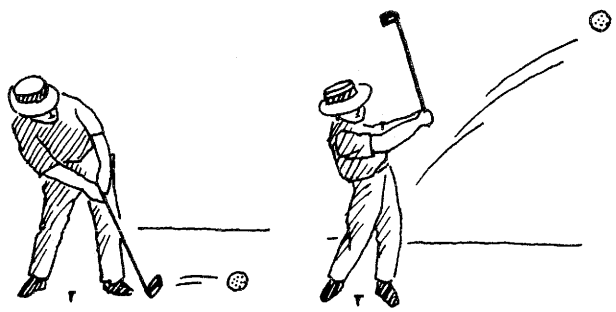

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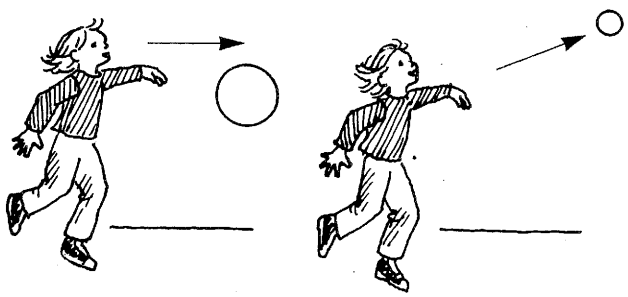

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Name _____ Class _____ Date _____

SECTION
2-4 Gravity

(pages 47–55)

KEY CONCEPTS

- The acceleration of a falling object is due to the force of gravity between the object and the Earth.
- Weight is a measure of the force of gravity on an object.

Building Vocabulary Skills: Expanding Definitions

Use the following terms to write a paragraph that describes gravity.

acceleration	falling object	9.8 m/sec/sec
universe	velocity	force
Earth	law of universal gravitation	

Falling Objects: Understanding the Main Ideas

Near the surface of the Earth, the acceleration due to gravity is 9.8 m/sec/sec. Use this information to complete the table below. Then use your data to make graph of velocity vs. time for a falling object.

Table 1: Falling Objects

Time in Air (sec)	Velocity (m/sec)
1	
2	
3	
	39.2
	49.0
6	
7	
8	
9	
	98.0

Graph: Velocity vs. Time for Falling Objects