

SECTION

1-4**Momentum**

(pages 25–28)

KEY CONCEPTS

- ▲ Momentum depends on the mass of the object and the velocity with which it is traveling.
- ▲ The total momentum of any group of objects remains the same unless outside forces act on the objects.

■ Building Vocabulary Skills: Understanding Definitions

Which of the following statements *do not* accurately describe momentum?
Draw an X through the numbers of those statements.

1. Momentum is equal to the mass of an object divided by its velocity.
2. The momentum of an object can change.
3. Two objects with the same mass will always have the same momentum.
4. All moving objects have momentum.
5. When an object speeds up, it gains momentum.
6. Objects with different masses can have the same momentum.
7. Direction does not matter when you are measuring momentum.
8. Momentum cannot be transferred from one object to another.
9. When objects collide, some momentum is lost.
10. A tiny bullet can have more momentum than a huge truck.

■ Calculating Momentum: Understanding the Main Ideas

Use the information in Table 1 to calculate the momentum of each object. Then list the objects in order according to momentum. Begin with the object that has the least momentum and end with the object that has the greatest momentum.

Table 1

Object	Mass (kg)	Velocity (m/s)	Momentum (kg-m/sec)
blackbird	0.04	19	
football player	100	10	
skier	60	20	
bullet	0.004	600	
frog	0.9	12	
meteorite	0.1	1,000	
baseball	0.14	30	
rocket	36,000	1,800	
wagon	2	3	
satellite	3,000	8,000	

OBJECTS IN ORDER OF MOMENTUM: _____

1. Does the order of these objects surprise you? If you had seen just the names of the objects without the data, would you have placed some in a different order? Why?

2. Do you think that these objects would always be placed in the same order according to momentum? Why or why not?
