

Directed Reading A

Section: Newton's Laws of Motion

1. In 1686, what did Sir Issac Newton explain with his three laws of motion?

NEWTON'S FIRST LAW OF MOTION

2. What is Newton's first law of motion?

3. Which of Newton's laws of motion describes the motion of an object that has a net force of 0?

4. What are two examples of objects at rest?

5. How could an unbalanced force work on a chair at rest on the floor to make it slide across the room?

6. According to Newton's first law of motion, what will happen to the motion of objects moving with a certain velocity unless an unbalanced force acts on them?

7. If you were in a bumper car that stops when it hit another car, would you continue to move forward? Why or why not?

8. What unbalanced force acts to stop a desk that is sliding across a floor?

Directed Reading A *continued*

9. What does friction do to the motion of objects?

10. What is Newton's first law sometimes called?

11. What is the tendency of an object to resist being moved or, if the object is moving, to resist a change in speed or direction until an outside force acts on the object?

12. Why is it easier to change the motion of an object with a large mass than an object with a small mass?

NEWTON'S SECOND LAW OF MOTION

13. What is Newton's second law of motion?

14. What happens to the acceleration of an object as its mass decreases?

15. What happens to the acceleration of an object if the force on the object increases?

16. Why would a cart start moving faster if you gave it a hard push than if you gave it a soft push?

17. In what direction do objects accelerate?

Directed Reading A *continued*

18. How is the relationship of acceleration (a) to mass (m) and force (F) expressed mathematically?

19. Why is an apple easier to accelerate than a watermelon?

NEWTON'S THIRD LAW OF MOTION

20. What is Newton's third law of motion?

21. Explain why Newton's third law can be stated as "all forces act in pairs."

22. What action and reaction forces are present when you are sitting on a chair?

23. How do action and reaction forces move a swimmer forward in the water?

24. Since all forces act in pairs, what happens when a force is exerted?

25. When a ball falls to Earth, why is it hard to see the effect of the reaction force exerted by the ball on Earth?
