

Lesson Outline**LESSON 3****Newton's Second Law****A. How do forces change motion?**

1. Forces change an object's motion by changing its _____, its _____, or both.
2. Only _____ forces can change the velocity of an object.
3. You know unbalanced forces are acting on an object that is at rest when the object starts _____.
4. Unbalanced forces change the _____ of a moving object.
 - a. If a net force acts on a moving object in the direction that the object is moving, the object will _____.
 - b. If a net force acts on a moving object in the direction that is opposite to the direction that the object moves, the object _____.
 - c. Another way unbalanced forces can change the velocity of a moving object is to change the _____ of the object's motion.
5. The force of gravity acts on a ball that is thrown by changing the direction of the ball, pulling it _____.
6. Another name for change in velocity over time is _____.
7. Unbalanced forces can make an object accelerate by changing the object's _____, _____, or both.

B. Newton's Second Law of Motion

1. According to _____, the acceleration of an object is equal to the net force acting on the object divided by the object's mass.
2. The direction of acceleration is the same as the direction of the _____.
3. The units for Newton's second law are SI units—force is measured in _____; mass is measured in _____; acceleration is measured in _____.
4. One newton is the same as one _____.

Lesson Outline continued

C. Circular Motion

1. _____ is any motion in which an object is moving in a curved path.
2. _____ causes objects to tend to move along a straight path.
3. In circular motion, a force that acts perpendicular to the direction of motion toward the center of the circle is called a(n) _____.
4. An object that is moving in a curve accelerates in the _____ of the centripetal force.
5. Any object that circles a larger object is called a(n) _____.
 - a. Satellites move in a circle because a(n) _____ acts on them.
 - b. _____ is the centripetal force that acts on satellites by continuously changing their direction of motion; this results in _____ motion.
6. Earth's _____ keeps the Moon in orbit around Earth.
7. The planets remain in orbit because the _____ gravity pulls on them.