

Chapter 2.1 RSG Answers

READING STUDY GUIDE B

1. Sample answer: push; pull; change motion; change speed; change direction
2. contact force, gravity, friction; sample sketches: pushing a broom, dropping a coin, skate wheels on a road
3. contact force
4. size, direction
Sample sketches: a bike moving straight at a constant speed and a bike turning or tipping; arrows show the contact force of the feet on pedals, gravity toward Earth, and friction between the wheels and the road.
5. A world without friction could exist only in thought.
6. The baseball is acted upon by an unbalanced force (the bat). This causes the motion of the ball to change direction.
7. Sample answer: resistance; relates to mass; law of inertia; motion continues

Chapter 2.2 RSG Answers

READING STUDY GUIDE B

1. acceleration increases as force increases and decreases as mass increases; direction an object accelerates is the same as the force
2. the baseball
3. You can calculate one of the factors if you know the other two. The mathematical form of the law is $F = ma$. The newton is the standard unit of force. Students should include a sketch showing the relationship among force, mass, and acceleration.
4. $F = ma$, $F = 65 \text{ kg} \cdot 4 \text{ m/s}^2$, so Force = 260 N
5. If the same force acts on two objects, the object with less mass will have the greater acceleration. If objects lose mass, they gain acceleration if the force remains the same.
6. If the force remains the same, and an object loses mass, it will speed up. As a rocket uses up its fuel, it becomes lighter. The force stays the same, so the rocket speeds up.
7. Newton's second law says that if you apply a force to an object, it will accelerate in the direction of the force.
8. force that keeps an object moving in a circle; points towards the center of the circle; stops an object from going in a straight line
9. The force is always pointing along the string toward your hand.
10. It increases.