

Lesson 2 Force and motion: True or False

Name _____ Class _____ Date _____

Determine if the following statements are true or false.

- _____ 1. Mass is a measure of the force of gravity on an object.
- _____ 2. Most objects have at least two forces acting on them at all times.
- _____ 3. If opposing forces are unequal in strength, the net force is less than zero.
- _____ 4. The SI unit for weight is the newton.
- _____ 5. When two forces act on an object in the same direction, the net force equals zero.
- _____ 6. When forces act in opposite directions on an object, they are subtracted to yield the net force.
- _____ 7. Every sport involves forces.
- _____ 8. Forces are always balanced when they act on an object in the same direction.
- _____ 9. Whenever an object is stationary, it has no forces acting on it.
- _____ 10. Two forces acting in the same direction always result in a stronger force.

Critical Reading

Read this passage from the text and answer the questions that follow.

Forces Acting in Opposite Directions

When two forces act on an object in opposite directions, the net force is equal to the difference between the two forces. The net force is calculated by subtracting the lesser force from the greater force. How opposing forces affect the motion of an object depends on whether the forces are balanced or unbalanced.

- If opposing forces are balanced, they are equal in strength and the net force is zero. With a net force of zero acting on an object, its motion does not change. If it isn't moving, it remains stationary. If it is moving, its speed and direction do not change.
- If opposing forces are unbalanced, they are not equal in strength and the net force is greater than zero. With a net force greater than zero acting on an object, its motion changes. If it is stationary, it starts moving. If it is already moving, its speed or direction changes.


Questions

1. How is net force calculated when two forces act on an object in opposite directions?



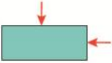

2. How do opposing forces affect the motion of an object if the forces are balanced?
3. How do unbalanced forces affect an object's motion?

Multiple Choice

Write the number of the correct choice.

1. Force can cause a
 1. stationary object to start moving.
 2. moving object to change speed.
 3. moving object to change direction.
 4. all of the above
2. Examples of forces include
 1. motion.
 2. friction.
 3. acceleration.
 4. two of the above
3. If gravity pulls you down toward the center of Earth with a force of 500 N, how much upward force does the ground exert on you?
 1. 0 N
 2. 50 N
 3. 500 N
 4. none of the above
4. In the following sketch, what is the net force acting on the box?
 

1. 5 N to the right
 2. 5 N to the left
 3. 15 N to the right
 4. 15 N to the left
5. Which diagram represents balanced forces?

1. 
2. 
3. 
4. 

6. Which pair of forces in question 5 differ from each other in both strength and direction?
 1. a
 2. b
 3. c
 4. d
7. Which pair of forces in question 5 produces a net force of zero?

1. a
2. b
3. c
4. d

Matching

Match each definition with the correct term.

Definitions

- _____ 1. combination of all the forces acting on an object
- _____ 2. force that a person or thing exerts on to an object
- _____ 3. push or pull acting on an object
- _____ 4. forces that produce a net force of zero
- _____ 5. example of a force
- _____ 6. SI unit for force
- _____ 7. forces that produce a net force greater than zero

Terms

- a. force
- b. unbalanced forces
- c. net force
- d. applied force
- e. newton
- f. gravity
- g. balanced forces

Fill in the Blank

Fill in the blank with the appropriate term.

1. Whenever the motion of an object changes, _____ has been applied.
2. Force is a(n) _____ because it has both size and direction.
3. The amount of force needed to cause a mass of 1 kilogram to accelerate at 1 m/s^2 is _____.

4. How a force affects an object's motion depends on the strength of the force and the _____ of the object.
5. If force is represented by an arrow, the length of the arrow represents the _____ of the force.
6. When unequal and opposite forces act on an object, the forces are said to be _____.
7. When two forces act on an object in the same direction, the net force equals the _____ of the two forces.