

Content Vocabulary

LESSON 2

Newton's First Law

Directions: The sentences below include terms that have been used incorrectly. Use the terms below to rewrite each sentence, correcting the errors so the information in the sentence is correct. Underline each change you make.

balanced forces

inertia

net force

Newton's first law of motion

reference direction

unbalanced forces

1. The rule of inertia states that if the net force on an object is zero, then an object at rest will remain at rest and an object in motion will continue moving in a straight line with constant speed.

2. If you are moving a desk with a friend, you might use a forward direction as your net force.

3. If two people push on an object from opposite directions, but with the same amount of force, there will be unbalanced forces and a net force of zero.

4. Inertia is the combination of forces acting on an object.

5. Balanced forces combine and form a net force that is not zero.

6. In a car accident, seat belts help restrict the reference direction of the passengers.

Content Practice A

LESSON 2

Newton's First Law

Directions: *On each line, write the term from the word bank that correctly completes each sentence. Some terms may be used more than once.*

balanced constant direction inertia motionless
net force reference direction straight unbalanced velocity

1. The combination of all forces acting on an object is the _____.

2. Because forces have a(n) _____, a(n) _____ must be specified when forces are combined.

3. Forces that combine to produce a(n) _____ of zero are _____; for a nonzero quantity, they are _____.

4. Newton's first law of motion states that if zero force is acting on an object at rest, the object will continue to be _____.

5. The same law states that a moving object subjected to zero force will continue in a(n) _____ line at a(n) _____ speed.

6. A(n) _____ set of forces cause a moving object to change its _____.

7. The tendency of an object to resist a change in its motion is called _____.

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Newton's First Law

Directions: Use your textbook to answer each question.

- 1. Net force is the combination of all forces acting on an object at the same time.**

What is the difference in net force between forces acting on an object in the same direction and forces acting on an object in opposite directions?

- 2. Newton's first law of motion states that if a net force on an object is zero, then the motion of the object does not change.**

What does Newton's first law of motion tell us about velocity?

- 3. An object that is in motion has inertia.**

What is inertia?

Key Concept Builder **LESSON 2**

Newton's First Law

Key Concept How is motion related to balanced and unbalanced forces?

Balanced forces produce a lack of motion or a steady velocity. Unbalanced forces put a stationary object into motion (produce an acceleration) or change the velocity of a moving object.

Directions: *On the line before each item, write B if it represents balanced forces or U if it represents unbalanced forces.*

- _____ 1. a book lying on a table
- _____ 2. an airplane cruising in level flight
- _____ 3. a rock falling from a cliff
- _____ 4. a bridge collapsing in an earthquake
- _____ 5. a train rounding a curve at a steady speed
- _____ 6. a man sitting on a park bench
- _____ 7. the space shuttle taking off
- _____ 8. a satellite in orbit
- _____ 9. a car maintaining a constant speed on a straight road
- _____ 10. an airplane landing

Key Concept Builder 

LESSON 2

Newton's First Law

Key Concept What effect does inertia have on the motion of an object?

Directions: Read the scenario. Then answer the question on the lines provided.

At a bowling alley, people bowl while a storm howls outside. Suddenly, a side door of the building is blown open and a strong wind sweeps through the alley. The wind scatters many objects, but the bowling balls rolling down the lanes are unaffected.

1. Why did the wind entering the bowling alley scatter many objects but have no effect on the bowling balls?

Directions: On each line, write the term that correctly completes each sentence.

2. The tendency of an object to resist a change in its motion is called _____.
3. That tendency and the force of _____ affect an object's motion.

Lesson Quiz A**LESSON 2****Newton's First Law****True or False**

Directions: *On the line before each statement, write T if the statement is true or F if the statement is false.*

- _____ 1. To find net force, you must specify the direction in which each force acts.
- _____ 2. According to Newton's first law, the motion of an object does not change if the net force acting on it is zero.
- _____ 3. If there were no friction, a moving object would keep moving, even if no other force were applied to it.
- _____ 4. Inertia is two or more forces acting in opposite directions.

Multiple Choice

Directions: *On the line before each question, write the letter of the correct answer.*

- _____ 5. If one force of 30 N and another force of 85 N result in a net force of 55 N, which term describes the two forces?
- A.** negative forces
B. balanced forces
C. unbalanced forces
- _____ 6. Which term explains why a crash-test dummy lunges forward during a car crash?
- A.** inertia
B. gravity
C. velocity
- _____ 7. What happens to an object at rest if balanced forces act upon it?
- A.** The object remains at rest.
B. The object begins to move at a constant speed.
C. The object begins to move and then slows down.
- _____ 8. If the reference direction is to the left and a force of 45 N acts to the left while another force of 65 N acts to the right, how much net force is acting on the object?
- A.** 20 N
B. -20 N
C. 110 N

