

READING SCIENCE!

Name: _____

Date: _____

Forcibly Speaking

Lexile 1070L

1 Every day, we are surrounded by a number of forces. Professional football players are able to make touchdowns and field goals because the force of gravity keeps the ball from floating away into space. A stretched rubber band pops back into place because of the elastic force that restores its shape. The school bus is able to stop at a red light because of the friction force exerted on the brakes. And bodybuilders are able to bench press hundreds of pounds at a time because of the muscle force that forms their biceps. These are just a few of the millions of forces that allow us to function safely and effectively in every area of our daily lives.



2 A force is simply defined as a push or a pull. A force can be either balanced or unbalanced. Balanced forces are equal in size and opposite in direction which means that there is no change in the motion of the object. Unbalanced forces will cause a change in an object's motion because the force is not equal in size or direction. When the forces are not balanced, there is a net force on the object.

3 An easy way to tell if the forces acting on an object are unbalanced is by looking at its acceleration. In science, the word acceleration means any change of speed or direction. If the object is accelerating, the forces are unbalanced. If there is no acceleration, the forces must be balanced. Objects accelerate by speeding up, slowing down, or changing directions.

- 4 An example of unbalanced forces is when a car has run out of gasoline and must be pushed. The force used to push the car is greater than the friction between the road and the tires. A second example of unbalanced forces is a baseball being caught by a glove. The force the glove exerts on the ball is larger than the force the ball exerts on the glove so the ball comes to a stop.

- 5 Unbalanced forces are part of everything you do. To make any object move from one location to another, including yourself, there must be a net force greater than zero, which means unbalanced forces must be present.

1 Based on the passage, an object in motion at an increasing speed is —

- A accelerating.
- B at rest.
- C coming to a stop.
- D none of the above

2 An example of an unbalanced force is —

- A a computer on a table.
- B a man leaning against a wall.
- C a girl serving a volleyball.
- D fruit in a bowl.

3 An unbalanced force causes a change in motion because —

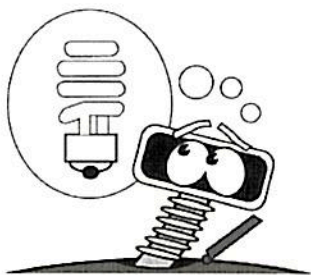
- A they are equal in size and or direction.
- B the force of gravity forces this to occur.
- C the two forces are not equal in size and/or direction.
- D A and B

4 An object accelerates when it -

- A slows down.
- B changes direction.
- C speeds up.
- D all of the above

- 5 The term **net force** was used in paragraphs 2 and 5. Which of the following could be a definition of net force?
- A The force between sliding surfaces
 - B An overwhelming force
 - C The sum of all of the forces acting on an object
 - D The force on objects with large masses





PRE-ASSESSMENT

Name: _____ Date: _____



- 1 If you have 30N of force pulling left and another 20N of force pushing left, what is the total amount of force and in which direction?

- A 50N Left
- B 10N Left
- C 50N Right
- D 10N Right

- 2 Calculate the net force of the following situation: $\leftarrow 2\text{N} + \rightarrow 8\text{N} =$

- A $\leftarrow 10\text{N}$
- B $\leftarrow 6\text{N}$
- C $\rightarrow 10\text{N}$
- D $\rightarrow 6\text{N}$



- 3 What would be the best description of the net force between a woman and the chair she is sitting in?

- A 10N because the forces are unbalanced
- B 10N because the forces are balanced
- C 0N because the forces are balanced
- D 0N because the forces are unbalanced

- 4 Joseph is having a difficult time moving his sofa across the living room. He decides to place wheels on the legs of the sofa to make it easier. Which of the following forces is Joseph overcoming?

- A Gravity
- B Friction
- C Buoyant force
- D Unbalanced force

PRE-ASSESSMENT

8.6A: Unbalanced Forces Force, Motion, and Energy

- 5 Which of the following best describes an object's speed?
- A 30 miles
 - B 30 miles per hour
 - C 5 hours
 - D 30 miles per hour, south