

12.1 What are Forces
Honors Integrated Science
Problem Set

Name_____ Per._____ Date_____

Directions: Use the online ck12 reading, which is posted on the class website, to help you answer the following questions.

True/False: Write (T) for true and (F) for false on the line provided.

- _____ 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.

Multiple-Choice: Write the letter of the correct choice on the line provided.

- 1. _____ Force can cause a
 - a. stationary object to start moving.
 - b. moving object to change speed.
 - c. moving object to change direction.
 - d. all of the above
- 2. _____ Examples of forces include
 - a. motion.
 - b. friction.
 - c. acceleration.
 - d. two of the above

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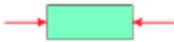
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3. _____ If gravity pulls you down toward the center of Earth with a force of 500 N, how much upward force does the ground exert on you?
- 0 N
 - 50 N
 - 500 N
 - none of the above

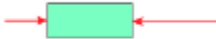
4. _____ In the following sketch, what is the net force acting on the box?



- 5 N to the right
 - 5 N to the left
 - 15 N to the right
 - 15 N to the left
5. _____ Which diagram represents balanced forces?



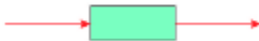
- a. [Figure2]



- b. [Figure3]



- c. [Figure4]



- d. [Figure5]

6. _____ Which pair of forces in question 5 differ from each other in both strength and direction?
- a
 - b
 - c
 - d

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7. _____ Which pair of forces in question 5 produces a net force of zero?

- a. a
- b. b
- c. c
- d. d

Matching: Match each definition with the correct term.

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

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

Fill-In: Fill in the blank with the appropriate term on the line provided. Words may be used more than one time.

Terms: 1 N, mass, force, sum, vector, unbalanced, strength (size)

- 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.

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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.