

Chapter 6 Test Newton's Second Law of Motion—Force and Acceleration

True or False Questions*Circle the correct answer.*

- T** **F** 1. Objects move only when a force is exerted.
- T** **F** 2. The acceleration of an object is inversely proportional to the net force acting on it.
- T** **F** 3. Air resistance is caused by friction between the air and an object moving through the air.
- T** **F** 4. Pressure is defined as the force one object exerts on another object.
- T** **F** 5. The speed of an object dropped in air will continue to increase without limit until it strikes the ground.

Multiple Choice Questions*Choose the best answer to each question and write the appropriate letter in the space provided.*

- _____ 6. The acceleration produced by a net force on an object is
a. directly proportional to the magnitude of the net force.
b. in the same direction as the net force.
c. inversely proportional to the mass of the object.
d. all of the above
- _____ 7. If the force acting on a cart doubles, what happens to the cart's acceleration?
a. It quadruples.
b. It doubles.
c. It halves.
d. It quarters.
- _____ 8. A girl whose weight is 200 N hangs from a bar supported by two strands of rope. What is the tension in each strand?
a. 400 N
b. 300 N
c. 200 N
d. 100 N
- _____ 9. Pressure is defined as
a. distance per unit time.
b. force per unit time.
c. force per unit area.
d. velocity per unit time.
- _____ 10. Which of the following would exert the most pressure on the ground?
a. A woman standing in running shoes
b. A woman standing in high heel shoes
c. A woman standing on skis

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- _____ 11. A tennis ball and a solid steel ball the same size are dropped at the same time. Which ball has the greater force acting on it?
- The tennis ball
 - The steel ball
 - They both have the same force acting on them.
- _____ 12. A tennis ball and a solid steel ball the same size are dropped at the same time. In the absence of air resistance, which ball has the greater acceleration?
- The tennis ball
 - The steel ball
 - Nonsense! They both have the same acceleration.
- _____ 13. As he falls from a high-flying stationary helicopter, Bronco's velocity increases and his acceleration
- decreases.
 - remains the same.
 - increases.

Math Problems

Solve the following problems in the space provided. Show all work.

14. You push with 30 N on a 3-kg block and there are no opposing forces. What is the block's acceleration?
15. A 50-kg block of cement is pulled upward (not sideways!) with a force of 600 N. What is its acceleration?

Essay Question

On a separate piece of paper, answer the following question.

16. What is terminal speed? When a skydiver has reached terminal speed, what is the air resistance equal to? What is the skydiver's acceleration?