

Chapter 3 PreQuiz Newton's First Law of Motion—Inertia

True or False Questions

Circle the correct answer.

- T** **F** 1. The amount of matter in an object is called its weight.
- T** **F** 2. The SI unit force is called the kilogram.
- T** **F** 3. If a hockey puck slides on a perfectly frictionless surface, it will eventually slow down because of its inertia.
- T** **F** 4. Inertia is the reluctance any material object has to change in its state of motion.
- T** **F** 5. The combination of all the forces that act on an object is called the net force.

Multiple Choice Questions

Choose the best answer to each question and write the appropriate letter in the space provided.

- _____ 6. The astronomer Copernicus was the first person to publicly state that Earth
- a. is the center of the solar system.
 - b. revolves around the sun.
 - c. does not move.
 - d. moves in a straight line.
- _____ 7. Whirl a rock at the end of a string and it follows a circular path. If the string breaks, the tendency of the rock is to
- a. follow a spiral path.
 - b. continue to follow a circular path.
 - c. follow a straight-line path.
- _____ 8. Galileo found that a ball rolling down one inclined plane would roll how far up another inclined plane?
- a. To nearly twice the height as where it originally started
 - b. To the nearly the same height as where it originally started
 - c. To nearly half its original height
 - d. To about one quarter its original height
- _____ 9. The law of inertia states that an object
- a. at rest will remain at rest unless acted on by an outside force.
 - b. will continue moving at the same velocity unless an outside force acts on it.
 - c. will continue moving in a straight line unless an outside force acts on it.
 - d. all of the above
- _____ 10. The law of inertia applies to
- a. moving objects.
 - b. objects at rest.
 - c. both moving and nonmoving objects.

Chapter 3 Test Newton's First Law of Motion—Inertia

- _____ 11. After a cannon ball is fired into frictionless space, the amount of force needed to keep it going equals
- twice the force with which it was fired.
 - the same amount of force with which it was fired.
 - one half the force with which it was fired.
 - zero, since no force is necessary to keep it moving.
- _____ 12. Which has more mass, a kilogram of feathers or a kilogram of iron?
- The feathers
 - The iron
 - Neither. The masses are equal.
- _____ 13. A 10-N force and a 30-N force act on an object in opposite directions. What is the net force on the object?
- 40 N
 - 30 N
 - 20 N
 - 10 N

Math Problems

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

14. On the surface of Jupiter the acceleration due to gravity is about 3 times that on Earth. How much would a 100 kg rock weigh on Jupiter?
15. The following forces act on an object: 20 N north, 50 N south, and 40 N west. What is the magnitude of the net force?

Essay Question

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

16. Write a short paragraph on the difference between mass and weight. Give examples.