

1. Imagine a place in the cosmos far from all gravitational and frictional influences. Suppose that you visit that place (just suppose) and throw a rock. The rock will

- a. gradually stop.
- b. continue in motion in the same direction at constant speed.



2. A 2-kg object is moving horizontally with a speed of 4 m/s. *How much net force is required to keep the object moving at this speed and in this direction?*

3. Mac and Tosh are arguing in the cafeteria. Mac says that if he flings the Jell-O with a greater speed it will have a greater inertia. Tosh argues that inertia does not depend upon speed, but rather upon mass. *Who do you agree with? Explain why.*

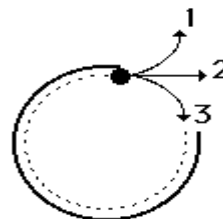
4. Supposing you were in space in a weightless environment, would it require a force to set an object in motion?

5. Fred spends most Sunday afternoons at rest on the sofa, watching pro football games and consuming large quantities of food. *What effect (if any) does this practice have upon his inertia? Explain.*

6. Ben Tooclose is being chased through the woods by a bull moose which he was attempting to photograph. The enormous mass of the bull moose is extremely intimidating. Yet, if Ben makes a zigzag pattern through the woods, he will be able to use the large mass of the moose to his own advantage. *Explain this in terms of inertia and Newton's first law of motion.*

7. Two bricks are resting on edge of the lab table. Shirley Sheshort stands on her toes and spots the two bricks. She acquires an intense desire to know which of the two bricks are most massive. Since Shirley is vertically challenged, she is unable to reach high enough and lift the bricks; she can however reach high enough to give the bricks a push. Discuss how the process of pushing the bricks will allow Shirley to determine which of the two bricks is most massive. *What difference will Shirley observe and how can this observation lead to the necessary conclusion?*

8. The group of physics teachers are taking some time off for a little putt-putt golf. The 15th hole at the Hole-In-One Putt-Putt Golf Course has a large metal rim which putters must use to guide their ball towards the hole. Mr. S guides a golf ball around the metal rim. *When the ball leaves the rim, which path (1, 2, or 3) will the golf ball follow?*



9. A 4.0-kg object is moving across a friction-free surface with a constant velocity of 2 m/s. Which one of the following horizontal forces is necessary to maintain this state of motion?

- a. 0 N
- b. 0.5 N
- c. 2.0 N
- d. 8.0 N
- e. depends on the speed.

10. If the forces acting upon an object are balanced, then the object

- a. must not be moving.
- b. must be moving with a constant velocity.
- c. must not be accelerating.
- d. none of these

11. When a person diets, is their goal to lose mass or to lose weight? Explain.

12. Different masses are hung on a spring scale calibrated in Newtons.

- 1. The force exerted by gravity on 1 kg = 9.8 N.
- 2. The force exerted by gravity on 5 kg = _____ N.
- 3. The force exerted by gravity on _____ kg = 98 N.
- 4. The force exerted by gravity on 70 kg = _____ N.