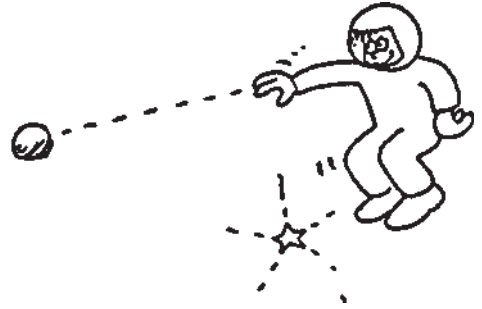


**Concept-Development Practice Page** **3-2**

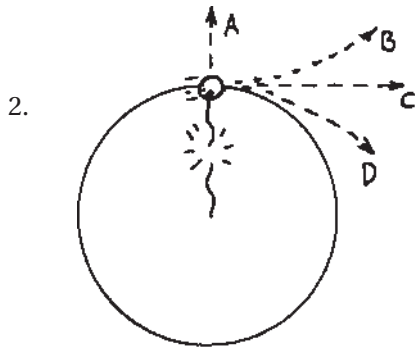
***Inertia***

*Circle the correct answers.*

1. An astronaut in outer space away from gravitational or frictional forces throws a rock. The rock will (gradually slow to a stop) **(continue moving in a straight line at constant speed).**



The rock's tendency to do this is called **(inertia)** (weight) (acceleration).



The sketch shows a top view of a rock being whirled at the end of a string (clockwise). If the string breaks, the path of the rock is

- (A) (B) **(C)** (D).

3. Suppose you are standing in the aisle of a bus that travels along a straight road at 100 km/h, and you hold a pencil still above your head. Then relative to the bus, the velocity of the pencil is 0 km/h, and relative to the road, the pencil has a horizontal velocity of

(less than 100 km/h) **(100 km/h)** (more than 100 km/h).

Suppose you release the pencil. While it is dropping, and relative to the road, the pencil still has a horizontal velocity of

(less than 100 km/h) **(100 km/h)** (more than 100 km/h).

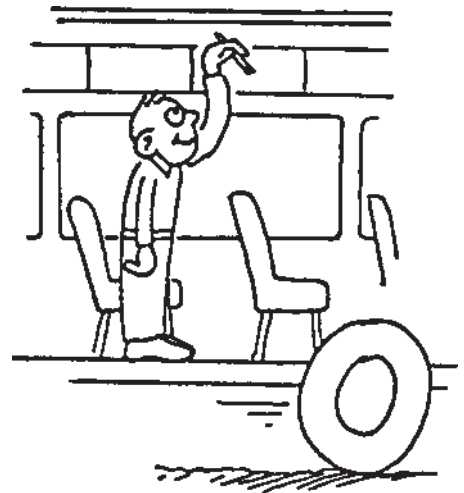
This means that the pencil will strike the floor at a place directly

(behind you) **(at your feet below your hand)** (in front of you).

Relative to you, the way the pencil drops

**(is the same as if the bus were at rest)**

(depends on the velocity of the bus).



How does this example illustrate the law of inertia?

**A body in motion tends to remain in motion as long as no net force is exerted on the body in the direction of motion. Since there is no horizontal force on the pencil, its horizontal motion doesn't change.**

**CONCEPTUAL PHYSICS**