

**Conceptual Physics, 11e (Hewitt)**

**Chapter 2 Newton's First Law of Motion: Inertia**

**2.1 Questions About Newton's First Law of Motion: Inertia**

1) Whereas Aristotle relied on logic in explaining nature, Galileo relied on

- A) logic also.
- B) patterns.
- C) experiment.
- D) mathematics.

Answer: C

Diff: 1

Topic: Early Science

2) The scientist to first introduce the concept of inertia was

- A) Aristotle.
- B) Galileo.
- C) Newton.
- D) Copernicus.

Answer: B

Diff: 1

Topic: Newton's 1st Law

3) Galileo's interpretation of motion differed from Aristotle's in that Galileo emphasized

- A) the acceleration of free fall.
- B) time rates.
- C) the role of distance in describing motion.
- D) all of these
- E) none of these

Answer: B

Diff: 1

Topic: Early Science

4) A sheet of paper can be withdrawn from under a container of milk without toppling it if the paper is jerked quickly. This best demonstrates that

- A) the milk carton has no acceleration.
- B) there is an action-reaction pair of forces.
- C) gravity tends to hold the milk carton secure.
- D) the milk carton has inertia.
- E) none of these

Answer: D

Diff: 1

Topic: Newton's 1st Law

5) An object in mechanical equilibrium is an object

- A) at rest.
- B) moving with constant velocity.
- C) having no acceleration.
- D) all of these

Answer: D

Diff: 2

Topic: Equilibrium

6) When you stand at rest on a pair of bathroom scales, the readings on the scales will always

- A) each be half your weight.
- B) each equal your weight.
- C) add up to equal your weight.

Answer: C

Diff: 2

Topic: Equilibrium

7) Hang from a pair of gym rings and the upward support forces of the rings will always

- A) each be half your weight.
- B) each equal your weight.
- C) add up to equal your weight.

Answer: C

Diff: 2

Topic: Equilibrium

8) A man weighing 800 N stands at rest on two bathroom scales so that his weight is distributed evenly over both scales. The reading on each scale is

- A) 200 N.
- B) 400 N.
- C) 800 N.
- D) none of these

Answer: B

Diff: 2

Topic: Equilibrium

9) The force of friction on a sliding object is 10 N. The applied force needed to maintain a constant velocity is

- A) more than 10 N.
- B) less than 10 N.
- C) 10 N.

Answer: C

Diff: 1

Topic: Friction

10) A 300-kg bear grasping a vertical tree slides down at constant velocity. The friction force between the tree and the bear is

- A) 30 N.
- B) 300 N.
- C) 3000 N.
- D) more than 3000 N.

Answer: C

Diff: 3

Topic: Friction

11) A package falls off a truck that is moving at 30 m/s. Neglecting air resistance, the horizontal speed of the package just before it hits the ground is

- A) zero.
- B) less than 30 m/s but larger than zero.
- C) about 30 m/s.
- D) more than 30 m/s.
- E) More information is needed for an estimate.

Answer: C

Diff: 2

Topic: Newton's 1st Law

12) A truck is moving at constant velocity. Inside the storage compartment, a rock is dropped from the midpoint of the ceiling and strikes the floor below. The rock hits the floor

- A) exactly below the midpoint of the ceiling.
- B) ahead of the midpoint of the ceiling.
- C) behind the midpoint of the ceiling.
- D) More information is needed to solve this problem.
- E) none of these

Answer: A

Diff: 2

Topic: Newton's 1st Law

13) If your automobile runs out of fuel while you are driving, the engine stops but you do not come to an abrupt stop. The concept that most explains why is

- A) inertia.
- B) gravity.
- C) acceleration.
- D) resistance.

Answer: A

Diff: 2

Topic: Newton's 1st Law

14) According to Newton's law of inertia, a railroad train in motion should continue going forever even if its engine is turned off. We never observe this because railroad trains

- A) move too slowly.
- B) are much too heavy.
- C) must go up and down hills.
- D) always have forces that oppose their motion.

Answer: D

Diff: 2

Topic: Newton's 1st Law

15) 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) continue to follow a circular path.
- B) follow a straight-line path.
- C) increase its speed.
- D) revolve in a smaller circle.

Answer: B

Diff: 1

Topic: Newton's 1st Law

16) When a rocket ship accelerating in outer space runs out of fuel, it

- A) accelerates for a short time, then slows down to a constant velocity.
- B) accelerates for a short time, slows down, and eventually stops.
- C) no longer accelerates.

Answer: C

Diff: 1

Topic: Newton's 1st Law

17) If no external forces are acting on a moving object, it will

- A) continue moving at the same speed.
- B) continue moving at the same velocity.
- C) move slower and slower until it finally stops.

Answer: B

Diff: 1

Topic: Newton's 1st Law

18) Galileo's use of inclined planes allowed him to effectively

- A) slow down the acceleration of free fall.
- B) increase the acceleration beyond that of free fall.
- C) eliminate the acceleration of free fall.
- D) eliminate friction.

Answer: A

Diff: 1

Topic: Linear Motion