

Chapter Test

Forces

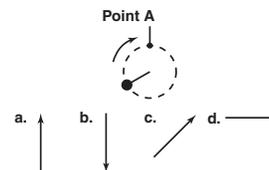
I. Testing Concepts

Directions: For each of the following, write the letter of the term or phrase that best completes each statement or answers each question.

- _____ 1. The upward force exerted on an object falling through air is _____.
a. terminal velocity c. air resistance
b. momentum d. weightless
- _____ 2. When an object moves in a circular path, it accelerates toward the center of the circle as a result of _____.
a. terminal velocity c. centripetal force
b. momentum d. friction
- _____ 3. The statement “to every reaction there is an equal and opposite reaction” is _____.
a. the law of conservation of momentum c. Newton’s second law of motion
b. Newton’s first law of motion d. Newton’s third law of motion
- _____ 4. In the equation, $p = mv$, p represents _____.
a. momentum b. friction c. inertia d. velocity
- _____ 5. Momentum is expressed in units of _____.
a. $\text{kg} \times \text{m}$ b. $\text{kg} \times \text{m/s}$ c. N d. m/s^2
- _____ 6. An object that is in free fall seems to be _____.
a. weightless c. speeded up by air resistance
b. slowed by air resistance d. not moving
- _____ 7. The relationship among mass, force, and acceleration is explained by _____.
a. Newton’s first law of motion c. Newton’s third law of motion
b. Newton’s second law of motion d. the conservation of momentum
- _____ 8. When two objects collide, their momentum after the collision is explained by _____.
a. Newton’s first law of motion c. Newton’s third law of motion
b. Newton’s second law of motion d. the conservation of momentum
- _____ 9. A feather will fall through the air more slowly than a brick because of _____.
a. gravity b. air resistance c. terminal velocity d. momentum
- _____ 10. In the absence of air, a penny and a feather dropped from the same height will _____.
a. fall at different rates c. fall at the same rates
b. float d. not have momentum
- _____ 11. The amount of gravitational force between objects depends on their _____.
a. frictional forces c. inertia
b. speed and direction d. masses and the distances between them
- _____ 12. The path of a projectile is _____.
a. straight b. always vertical c. always horizontal d. curved

Chapter Test (continued)

- _____ 13. The motion of an object parallel to Earth’s surface is _____.
a. horizontal b. vertical c. weightlessness d. momentum
- _____ 14. If a 300-N action force is exerted to the right, the reaction force will be _____.
a. 300 N to the right c. 300 N to the left
b. 600 N to the right d. 600 N to the left
- _____ 15. When a force is exerted on an object, an equal and opposite force is exerted by the object. These forces are referred to as _____.
a. centripetal forces c. gravitational forces
b. friction forces d. action-reaction forces
- _____ 16. Acceleration due to gravity is _____.
a. 98 m/s^2 b. 9.8 m/s^2 c. 9.8 m/s d. 0.98 m/s
- _____ 17. A real car moving at 10 km/h has more momentum than a toy car moving at the same rate because _____.
a. its mass is greater c. it moves faster
b. its mass is less d. of friction
- _____ 18. An object attached to a string that is being swung in a clockwise circular path is shown. Assume the string breaks at point A. In which direction will the object be traveling an instant later?



- _____ 19. According to Newton’s second law of motion, _____.
a. $F = mv$ b. $F = ma$ c. $F = pv$ d. $F = pa$
- _____ 20. Friction between the tire of a moving car and the dry pavement is _____ friction.
a. static b. rolling c. sliding d. riding
- _____ 21. Gravity is one of _____ basic forces.
a. two b. three c. four d. five
- _____ 22. A car rounding a curve is subject to _____ force.
a. rolling b. static c. centripetal d. gravitational
- _____ 23. The international space station is a(n) _____ satellite.
a. natural b. lunar c. directional d. artificial

Chapter Test (continued)

II. Understanding Concepts

Skill: Designing an Experiment

1. How could you use two equal-sized pieces of paper to show how air resistance affects objects of different shapes?

Skill: Making and Using Tables

2. Complete the table below by calculating the missing values.

Object	Mass	Velocity	Momentum
A	10 kg	25 m/s	
B		25 m/s	300 kg × m/s
C	25 kg		300 kg × m/s
D		25 m/s	500 kg × m/s

3. Use the information in the table above to answer the following questions.

a. Which object has the greatest momentum?

b. Which object has the least momentum?

c. How does the momentum of object B compare with the momentum of object C?

d. Why is the momentum for object B greater than the momentum for object A?

e. What factor causes object D to have a greater momentum than object C?

Skill: Concept Mapping

4. In an events chain concept map showing what happens when a bowling ball strikes the pins, how does the momentum of the bowling ball change at the time of impact?

5. What happens to the momentum of the pins at impact?
