

MULTIPLE CHOICE

1. The product of 4.82×10^4 and 1.2×10^7 is best expressed as
- a. 5.784×10^{11}
 - b. 5.7×10^{28}
 - c. 5.8×10^{11}
 - d. 5.78×10^{28}

ANS: C PTS: 1

2. The degree of exactness to which the measurement of the quantity can be reproduced is called:
- a. accuracy
 - b. precision
 - c. parallax
 - d. none of the above

ANS: B PTS: 1

3. A man walks 40 meters north, then 70 meters east, and then 40 meters south. what is his displacement from the starting point?
- a. 150 meters east
 - b. 150 meters west
 - c. 70 meters east
 - d. 70 meters west

ANS: C PTS: 1

4. The slope of the tangent on a position-time graph equals the
- a. average speed
 - b. constant speed
 - c. average velocity
 - d. instantaneous velocity

ANS: D PTS: 1

5. A car is accelerated at 4.0 m/s^2 from rest. the car will reach a speed of 28 m/s in ___ sec
- a. 3.5 sec
 - b. 7.0 sec
 - c. 14 sec
 - d. 24 sec

ANS: B PTS: 1

6. A rocket in space can travel without engine power at constant speed in the same direction. this condition is best explained by the concept of
- a. gravitation
 - b. action-reaction
 - c. acceleration
 - d. inertia

ANS: D PTS: 1

7. A child drops a ball. the instantaneous acceleration of the ball is ____?
- a. zero
 - b. 9.8 ms^2
 - c. increasing
 - d. decreasing

ANS: B PTS: 1

8. What is the magnitude of the velocity of a 25-kilogram mass that is moving with a momentum of 100, kilogram-meters per second
- a. 40. m/s
 - b. 2500 m/s
 - c. 0.25 m/s
 - d. 4.0 m/s

ANS: D PTS: 1

9. If the direction of the momentum of an object is west, the direction of the velocity of the object is
- a. west
 - b. east
 - c. south
 - d. north

ANS: A PTS: 1

10. A net force of 12 newtons acting north on an object for 4.0 seconds will produce an impulse of
- a. 48 kg-m/sec south
 - b. 48 kg-m/sec north
 - c. 3.0 kg-m/sec north
 - d. 3.0 kg-m/sec south

ANS: B PTS: 1

11. In a baseball game, a batter hits a ball for a home run. Compared to the magnitude of the impulse imparted to the ball, the magnitude of the impulse imparted to the bat is
- a. less
 - b. greater
 - c. the same

ANS: C PTS: 1

12. A test booklet is sitting at rest on a desk. Compared to the force of the booklet on the desk, the force of the desk on the booklet is
- a. greater
 - b. the same
 - c. less

ANS: B PTS: 1

13. What is scalar quantity?
- a. force
 - b. distance
 - c. acceleration
 - d. displacement

ANS: B PTS: 1

14. A student weighing 500 newtons stands on a spring scale in an elevator. If the scale reads 520 newtons, the elevator must be
- a. moving upward at constant speed
 - b. accelerating downward
 - c. accelerating upward
 - d. moving downward at a constant speed

ANS: C PTS: 1

15. Which statement explains why a book resting on a table is in equilibrium?
- a. There is a net force acting downward on the book.
 - b. the acceleration due to gravity is 9.8 m/s^2
 - c. The weight of the book is equal to the weight of the table.
 - d. the weight of the book and the table's upward force on the book are equal in magnitude, but opposite direction.

ANS: D PTS: 1

16. A baseball bat moving at high velocity strikes a feather. If air resistance is neglected, compared to the force exerted by the bat on the feather, the force exerted by the feather on the bat will be
- a. the same
 - b. larger
 - c. smaller

ANS: A PTS: 1

17. Which two quantities are measured in the same units?
- a. weight and force
 - b. force and momentum
 - c. velocity and acceleration
 - d. mass and weight

ANS: A PTS: 1

18. A 50 kilogram woman is wearing a seat belt in a traveling car that is moving with a velocity of +10 meters per second. In an emergency, the car is brought to a stop in .50 seconds. What force does the seat belt exert on the woman so that she remains in her seat?
- a. $-2.5 \times 10^1 \text{ N}$ c. $-5.0 \times 10^1 \text{ N}$
b. $-5.0 \times 10^2 \text{ N}$ d. $-1.0 \times 10^3 \text{ N}$

ANS: D PTS: 1

19. A student walks 3 blocks south, 4 blocks west, and 3 blocks north. What is the displacement of the student?
- a. 10 blocks west c. 4 blocks east
b. 4 blocks west d. 10 blocks east

ANS: B PTS: 1

20. What is the weight of the 5.0 - kg object at the surface of the Earth?
- a. 49 N c. 25 N
b. 49 kg d. 5.0 kg

ANS: A PTS: 1

21. Which is the most likely mass of a high school student?
- a. 250 kg c. 5 kg
b. 1 kg d. 60 kg

ANS: D PTS: 1

22. A satellite is accelerated away from Earth by rocket, the satellite's mass
- a. decreases c. remains the same
b. increases

ANS: C PTS: 1

23. A stone is dropped from a bridge 45 meters above the surface of the river. Approximately how many seconds does the stone take to reach the water's surface?
- a. 3.0 s c. 10. s
b. 22s d. 1.0 s

ANS: A PTS: 1

24. ON the planet gamma, a 4.0-kilogram mass experiences a gravitational force of 24 newtons. What is the acceleration due to gravity on the planet gamma?
- a. 6.0 m/s^2 c. 96 m/s^2
b. 0.17 m/s^2 d. 9.8 m/s^2

ANS: A PTS: 1

25. In an experiment that measures how fast a student reacts, a meter stick dropped from rest falls 0.20 meter before the student catches it. The reaction time of the student is approximately
- a. 0.30 s c. 0.20 s
b. 0.40 s d. 0.10 s

ANS: C PTS: 1

26. A car accelerates at 2 m/s/s . Assuming the car starts from rest, how much time does it need to accelerate to a speed of 30 m/s ?
- a. 2 sec. d. 60 sec.
b. 15 sec. e. None of the above
c. 30 sec.

ANS: B PTS: 1

27. As an object falls freely in a vacuum, its
- a. velocity increases c. Both of the above
b. acceleration increases d. None of the above

ANS: A PTS: 1

28. If a freely falling object were somehow equipped with a speedometer, its speed reading would increase each second by
- a. about 5 m/s
 - b. about 10 m/s
 - c. about 15 m/s
 - d. a variable amount
 - e. a rate that depends on its initial speed.

ANS: B PTS: 1

29. Ignoring air resistance, if a 10-kg ball and a 200-kg crate were both dropped from the top of a building, the acceleration of the crate would be _____ the acceleration of the ball.
- a. greater than
 - b. less than
 - c. equal to
 - d. none of the above

Ans: C PTS: 1

30. Which has more momentum, a large truck moving at 30 mi/hr or a small truck moving at 30 mi/hr?
- a. The large truck
 - b. The small truck
 - c. Both have the same momentum
 - d. none of the above

ANS: A PTS: 1

31. A rifle recoils after firing a bullet. The speed of the rifle's recoil is small because
- a. force against the rifle is relatively small
 - b. impulse on the rifle is less than the impulse on the bullet
 - c. rifle has lots more mass than the bullet
 - d. momentum of the rifle is unchanged

ANS: C PTS: 1

32. A toy rocket is launched straight up into the air and relatively close to the Earth's surface. When the rocket reaches its maximum height, its acceleration is
- a. at its maximum
 - b. at its minimum
 - c. constant
 - d. equal to its displacement divided by time

ANS: C PTS: 1

33. A trunk with a mass of 300.0 kg slides down a frictionless ramp that makes a 45 degree angle with the horizontal. The number of force vectors on a free body diagram for the trunk is equal to
- a. 5
 - b. 1
 - c. 2
 - d. 3

ANS: C PTS: 1

34. A toy rocket is launched straight up into the air. When the rocket reaches its maximum height, its velocity is
- a. at its maximum
 - b. at its minimum
 - c. equal to its displacement multiplied by time
 - d. equal to its displacement divided by time

ANS: B PTS: 1

35. As the mass of an object decreases, its inertia will
- a. remain the same
 - b. increase
 - c. decrease
 - d. become zero

ANS: C PTS: 1

36. Starting from rest, a rock that freefalls will fall how far in 3.6 seconds?
- a. 3.6 m
 - b. 65 m
 - c. 36 m
 - d. 10 m

ANS: A PTS: 1

37. An example of an elastic collision is
- a. A bullet lodging itself into a wooden stump
 - b. A Cue ball hitting the 8 ball
 - c. A large truck accelerating after a green light
 - d. A man running and jumping into a boat.

ANS: B PTS: 1