

1. Acceleration is
 - A. change of speed
 - B. change of direction
 - C. change of speed and/or direction
 - D. if its velocity is large.

2. If the mass of an object in **free fall** is tripled, its acceleration
 - A. triples
 - B. increases nine times
 - C. stays the same
 - D. is reduced by one third

3. If the net force on a helium balloon is directed straight upward, which way does the acceleration point?
 - A. towards the centre of the Earth
 - B. away from the centre of the Earth
 - C. no acceleration
 - D. in the direction of its weight

4. When you push a parked car that doesn't move, your force is
 - A. small and so is absorbed by the car
 - B. canceled by the reaction force of car from the Newton's third law
 - C. canceled by friction of the wheels on the road
 - D. canceled by the weight of the car

5. When you push a sturdy wall and the floor is slippery you slide away from the wall because the force pushing you is
 - A. friction between your feet and the ground
 - B. the reaction force of wall from Newton's third law
 - C. the force from your arm muscles
 - D. the pull of Earth's gravity

6. Your mass is 400N. When the elevator just begins to move upward the balance will read
 - A. 400 N
 - B. > 400 N
 - C. < 400 N
 - D. 0 N

7. Your mass is 400N. When the elevator moves upward at constant velocity, the balance will read
 - A. 400 N
 - B. > 400 N
 - C. < 400 N
 - D. 0 N

8. Your mass is 400N. When the elevator just begins to slow down while moving upward the balance will read

- A. 400 N
- B. > 400 N
- C. < 400 N
- D. 0 N

9. Your mass is 400N. When the elevator stops moving the balance will read

- A. 400 N
- B. > 400 N
- C. < 400 N
- D. 0 N

10. Your mass is 400N. When the elevator just begins to move down the balance will read

- A. 400 N
- B. > 400 N
- C. < 400 N
- D. 0 N

11. Your mass is 400N. When the elevator moves downward at constant velocity, the balance will read

- A. 400 N
- B. > 400 N
- C. < 400 N
- D. 0 N

12. Your mass is 400N. When the elevator just begins to slow down while moving downward the balance will read

- A. 400 N
- B. > 400 N
- C. < 400 N
- D. 0 N

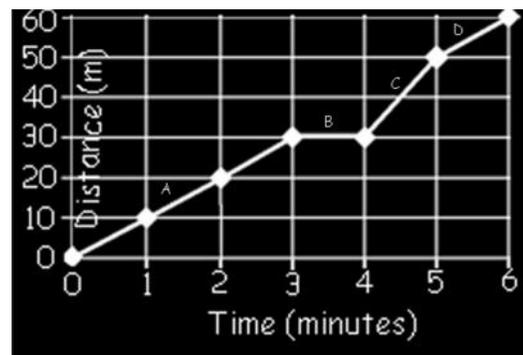
13. Two boats of the same dimensions X and Y face other. Boat X is loaded and its total mass is greater than that of Boat Y. A seaman from X pushes on boat Y.

- A. Boat X will slower than Y
- B. Boat X will move faster than X
- C. Boat X and Y will move with same speed
- D. Only boat X will move



14. Distance moved vs time is plotted for a car in traffic jam on a straight level road. Which interval had the greatest velocity?

- A.
- B.
- C.
- D.



15. After firing a cannon ball, the cannon recoils in the opposite direction from the ball. This is an example of:

- A. Newton's First Law
- B. Newton's Second Law
- C. Newton's Third Law
- D. Newton's Law of Gravitation

16. A heavy box sits stationary on the floor. The net force on the box is

- A. zero in all directions
- B. Non-zero and pointing down
- C. Non-zero and pointing left
- D. Non-zero and pointing right

17. An object is thrown straight up. What is the net force on the object when it is at the highest point in the path?

- A. It is greater than the weight
- B. It is slightly less than the weight
- C. It is zero
- D. It is equal to the weight

18. An elevator car weighs 6000 N and accelerates upwards at a rate of 4.0 ms^{-2} . What is the tension in the support cable?

- A. 1500 N
- B. 2400 N
- C. 24000 N
- D. 6004 N

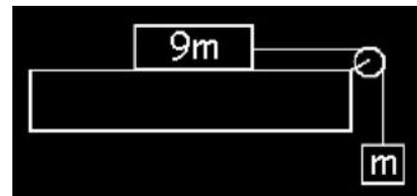
19. Two blocks of mass 20kg and 12kg are connected with an inextensible string and pulled on a horizontal frictionless surface. What is the tension on the string?

- A. $1.75F$
- B. $0.6F$
- C. F
- D. $0.375F$



20. A block of mass m is attached to another block of mass $9m$ on a frictionless table through a pulley. What is the acceleration of the blocks?

- A. 0.100 g
- B. 0.375 g
- C. 9.000 g
- D. 1.000 g



21. A ball of mass m is hung on two strings, each at an angle θ from the vertical. What is the tension on each string?

- A. $\frac{1}{2} mg \cos \theta$
- B. $\frac{1}{2} mg \sin \theta$
- C. $mg/(2 \cos \theta)$.
- D. $mg/(2 \sin \theta)$.

22. Provided the force acting on an object is constant, as the mass of an object increases, the acceleration of that object

- A. increases
- B. remains the same
- C. decreases
- D. is zero

23. An example of balanced forces is

- A. a car accelerating on a level road
- B. a tug-of-war game in which neither side advances
- C. an elevator starting to move upward
- D. a roller coaster going down the first drop

24. The motion of a jet aircraft is primarily based on the law of

- A. Newton's 1st law
- B. Newton's 2nd law
- C. Newton's 3rd law
- D. Newton's gravitation law

25. According to Newton's Second Law of Motion, if the net force acting on the object increases while the mass of the object remains constant, what happens to the acceleration?

- A. Acceleration decreases.
- B. Acceleration increases.
- C. Acceleration remains the same.
- D. Acceleration is independent of mass.

