

Rolling Friction Summary

ChatGPT said:



Here are 20 multiple-choice questions (MCQs) on **Laws of Motion** with the answers provided separately.

MCQs on Laws of Motion:

- 1. Which of the following is true about Newton's first law of motion?**
 - a) It is also known as the law of inertia
 - b) It describes the relationship between force and acceleration
 - c) It explains why objects fall at different rates
 - d) It only applies to objects in circular motion
- 2. The SI unit of force is:**
 - a) Joule
 - b) Watt
 - c) Newton
 - d) Pascal
- 3. Newton's second law states that:**
 - a) Force equals mass divided by acceleration
 - b) Force equals mass times acceleration
 - c) Force is independent of mass
 - d) Force and acceleration are inversely proportional
- 4. A 2 kg object is accelerating at 3 m/s². The net force acting on the object is:**
 - a) 6 N
 - b) 2 N
 - c) 3 N
 - d) 5 N
- 5. What is the direction of frictional force with respect to the motion of an object?**
 - a) Same direction as motion
 - b) Perpendicular to the surface
 - c) Opposite to the direction of motion
 - d) Along the normal force
- 6. The force needed to keep an object moving at constant velocity in space is:**
 - a) Equal to its weight
 - b) Equal to the force of gravity
 - c) Zero
 - d) Dependent on its velocity
- 7. What does the term "inertia" refer to?**
 - a) The tendency of objects to remain at rest
 - b) The tendency of objects to remain in motion
 - c) Both (a) and (b)
 - d) None of the above
- 8. The third law of motion states that for every action, there is:**
 - a) A force that equals acceleration
 - b) An equal and opposite reaction

- c) A force acting in the same direction
 - d) A constant velocity
9. **Which of the following is not an example of Newton's third law?** a) A rocket launching into space
- b) A ball resting on the ground
 - c) A person pushing against a wall
 - d) The recoil of a gun
10. **If the mass of an object is doubled while the applied force remains constant, the acceleration will:** a) Double
- b) Remain the same
 - c) Be halved
 - d) Increase fourfold
11. **Which of the following statements is correct regarding static friction?** a) It is always greater than kinetic friction
- b) It is independent of the normal force
 - c) It acts only when an object is in motion
 - d) It increases with increasing speed
12. **The impulse experienced by an object is equal to the:** a) Change in its kinetic energy
- b) Change in its velocity
 - c) Product of force and time
 - d) Change in its momentum
13. **When a car makes a sharp turn, passengers tend to move outward due to:** a) Centripetal force
- b) Inertia
 - c) Gravity
 - d) Friction
14. **The force required to maintain an object moving in a circular path is called:** a) Gravitational force
- b) Centripetal force
 - c) Centrifugal force
 - d) Frictional force
15. **Which of the following quantities is conserved in an isolated system?** a) Velocity
- b) Force
 - c) Momentum
 - d) Acceleration
16. **The rate of change of momentum of an object is equal to:** a) Force applied to the object
- b) The object's velocity
 - c) The object's displacement
 - d) The object's kinetic energy
17. **If two objects of different masses experience the same force, the object with the smaller mass will:** a) Experience less acceleration
- b) Experience the same acceleration
 - c) Experience greater acceleration
 - d) Not move
18. **Which of the following forces is a non-contact force?** a) Friction
- b) Tension

- c) Gravitational force
 - d) Applied force
19. **An object is moving in a straight line with constant speed. According to Newton's laws, which statement is true?**
- a) There is a net force acting on the object
 - b) No net force is acting on the object
 - c) The object must be accelerating
 - d) The object's inertia is zero
20. **If the velocity of an object is tripled, its kinetic energy will:**
- a) Remain the same
 - b) Triple
 - c) Increase ninefold
 - d) Double
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Answer Key:

- 1. **a**
- 2. **c**
- 3. **b**
- 4. **a**
- 5. **c**
- 6. **c**
- 7. **c**
- 8. **b**
- 9. **b**
- 10. **c**
- 11. **a**
- 12. **d**
- 13. **b**
- 14. **b**
- 15. **c**
- 16. **a**
- 17. **c**
- 18. **c**
- 19. **b**
- 20. **c**