

Newton's Laws Unit Practice Exam

- _____ 1. A 30-N force and a 50-N force act on an object in opposite directions. What is the net force on the object?
- _____ 2. What is the maximum resultant possible when adding a 2-N force to a 12-N force?
- _____ 3. Equilibrium occurs when
- _____ 4. The weight of a person can be represented by a vector that acts
- _____ 5. You are helping your aunt move a piano on wheels from one room to another. When you push the piano horizontally, it moves at constant speed. What can you say about the piano?
- _____ 6. Friction is a force that always acts
- _____ 7. The law of inertia states that an object
- _____ 8. After a cannonball is fired into frictionless space, the amount of force needed to keep it going equals

- ___ 9. A sheet of paper can be withdrawn from under a container of milk without toppling it if the paper is jerked quickly. The reason this can be done is that
- ___ 10. An object following a straight-line path at constant speed
- a. has no forces acting on it.
 - b. has a net force acting on it in the direction of motion.
 - c. has zero acceleration.
 - d. must be moving in a vacuum.
 - e. none of the above
- ___ 11. One object has twice as much mass as another object. The first object also has twice as much
- ___ 12. Compared to its weight on Earth, a 10-kg object on the moon will weigh
- ___ 13. Compared to its mass on Earth, the mass of a 10-kg object on the moon is
- ___ 14. You would have the largest mass of gold if your chunk of gold weighed 1 N on (and why?)
- a. Earth.
 - b. Jupiter.
 - c. the moon.
- ___ 15. How much does a 3.0-kg bag of bolts weigh on earth?
- ___ 16. Accelerations are produced by

- ___ 17. How does acceleration of an object change in relation to its mass? It is
- directly proportional.
 - Acceleration doesn't depend on mass at all.
 - inversely proportional.
- ___ 18. The acceleration produced by a net force on an object is
- inversely proportional to the mass of the object.
 - directly proportional to the magnitude of the net force.
 - in the same direction as the net force.
 - all of the above
 - none of the above
- ___ 19. When an object reaches terminal velocity its acceleration is
- ___ 20. Suppose the force of friction on a sliding object is 25 N. The force needed to maintain a constant velocity is
- ___ 21. A bowling ball weighs 20 N. When held at rest in your hands, the net force on the bowling ball is
- ___ 22. A girl pulls on a 9-kg wagon with a constant force of 27 N. What is the wagon's acceleration?
- ___ 23. An object has a constant mass. A constant force on the object produces constant
- ___ 24. A push on a 5-kilogram brick accelerates the brick. Neglecting friction, to equally accelerate a 10-kilogram brick, one would have to push
- ___ 25. A block is dragged without acceleration in a straight-line path across a level surface by a force of 11 N. What is the frictional force between the block and the surface?

- _____ 26. Which of the following would exert the most pressure on the ground and why?
- A woman standing in running shoes
 - A woman standing on skis
 - A woman standing in high-heel shoes
- _____ 27. If you pull horizontally on a box with a force of 150 N and the box doesn't move, the friction force must be 150 N. Now if you pull with 270 N so the box slides at constant velocity, the friction force is
- _____ 28. Suppose a cart is being moved by a force. If suddenly a load is dumped into the cart so that the cart's mass doubles, what happens to the cart's acceleration?
- _____ 29. You are on a frozen pond, and the ice starts to crack. If you lie down on the ice and begin to crawl, this will (and why?)
- increase the pressure on the ice.
 - decrease the pressure on the ice.
 - increase the total force on the ice.
 - decrease the total force on the ice.
- _____ 30. A 11-N falling object encounters 7 N of air resistance. The magnitude of the net force on the object is
- _____ 31. A car has a mass of 2000 kg and accelerates at 3 meters per second squared. What is the magnitude of the force acting on the car?
- _____ 32. A tow truck exerts a force of 4000 N on a car, accelerating it at 4 m/s/s. What is the mass of the car?

- ___ 33. A jet has a mass of 30,000 kg. The thrust for each of four engines is 15,000 N. What is the jet's acceleration when taking off?
- ___ 34. You pull horizontally on a 50-kg crate with a force of 350 N and the friction force on the crate is 50 N. The acceleration of the crate is
- ___ 35. How much force is needed to accelerate a 2.0-kg physics book to an acceleration of 5.0 m/s^2 ?
- ___ 36. A 9-N falling object encounters 9 N of air resistance. The magnitude of the net force on the object is
- ___ 37. An archer shoots an arrow. Consider the action force to be the bowstring against the arrow. The reaction to this force is the
- ___ 38. A player hits a ball with a bat. The action force is the impact of the bat against the ball. What is the reaction to this force?
- ___ 39. A large truck and a small car traveling at the same speed have a head-on collision. The vehicle to undergo the greater change in velocity will be
- ___ 40. You drive past a farm, and you see a cow pulling a plow to till a field. You have just learned about Newton's third law, and you wonder how the cow is able to move forward if the plow is exerting an equal and opposite force on the cow. Which of the following explains the movement of the cow and plow?