

PHYSICS 1010
CHAPTER 1-6 EXAM
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Directions: Read each question carefully and select the best answer from the choices given. Place your answers on the answer sheet provided.

1. Science is a body of knowledge that
 - a. describes order in nature.
 - b. is an ongoing activity of humans
 - c. condenses knowledge into testable laws
 - d. all of the choice are correct
 - e. None of the answers are correct

2. Eratosthenes learned about the position of the sun on June 22 by
 - a. consulting library information
 - b. setting up a stick at Syene
 - c. setting up a stick at Alexandria
 - d. setting up sticks at both Syene and Alexandria
 - e. none of the above choices are correct

3. The easiest way for you to measure the distance between the earth and the moon is to place in your line of sight to the moon a
 - a. magnifying glass
 - b. coin
 - c. telescope
 - d. meter stick

4. The safest way to view the sun is with
 - a. a telescope
 - b. binoculars
 - c. pinhole images
 - d. colored sun glasses

5. A sheet of paper can be withdrawn from under a container of milk without toppling it if the paper is jerked quickly. This best demonstrates that
 - a. the milk carton has no acceleration
 - b. there is an action-reaction pair of forces
 - c. gravity tends to hold the milk carton secure.
 - d. the milk carton has inertia
 - e. none of these answers

6. The gain in speed each second for a freely-falling object is about
 - a. 0
 - b. 5 m/s
 - c. 10 m/s
 - d. 20 m/s
 - e. depends on the initial speed

7. According to Newton's law of inertia, a rail road train in motion should continue going forever even if its engine is turned off. We never observe this because railroad trains
 - a. move too slowly
 - b. are much too heavy
 - c. must go up and down hills
 - d. always have forces that oppose their motion

8. The last instant just before an airplane crashes a passenger jumps out the door and falls only two feet to the ground. The passenger is
 - a. probably hurt or killed
 - b. unharmed
 - c. intelligent to think so fast
 - d. lucky to have studied physics

9. A scientific statement that can never be changed is a scientific
- theory
 - principle
 - hypothesis
 - law
 - none of the above choices are correct
10. Galileo's use of inclined planes allowed him to effectively
- slow down the acceleration of free fall
 - increase the acceleration beyond that of free fall
 - eliminate the acceleration of free fall.
 - eliminate friction
11. The two measurements necessary for calculating average speed are
- acceleration and time
 - velocity and time
 - distance and time
 - distance and acceleration
 - velocity and distance
12. A hockey puck is set in motion across a frozen pond. If ice friction and air resistance are neglected, the force required to keep the puck sliding at a constant velocity is
- zero
 - equal to its weight
 - equal to its weight divided by its mass
 - equal to the product of its mass times its weight
13. If an object falling freely were somehow equipped with an odometer to measure the distance it travels, Then the amount of distance it travels each succeeding second would be
- constant
 - less and less each second
 - greater than the second before
 - doubled
14. Drop a rock from a 5-m height and it accelerates at 10 m/s^2 and strikes the ground 1 s later. Drop the same rock from a height of 2.5 m and its acceleration of fall is about
- half as much
 - the same amount
 - twice as much
 - four times as much
15. Suppose a particle is being accelerated through space by a 10-N force. Suddenly the particle encounters a second force of 10 N in the opposite direction from the first force. The particle with both forces acting on it
- is brought to a rapid halt
 - decelerates gradually to a halt
 - continues at the speed it had when it encountered the second force
 - theoretically tend to accelerate towards the speed of light
 - none of these
16. A 2000-kg car experiences a braking force of 10,000 N and skids to a stop in 6 seconds. The speed of the car just before the brakes were applied was
- 1.2 m/s
 - 15 m/s
 - 30 m/s
 - 45 m/s
 - none of these
17. If an object of constant mass experiences a constant net force, it will have a constant
- velocity
 - speed
 - acceleration
 - position
 - more than one of the above
18. A light woman and a heavy man jump from an airplane at the same time and open their same-size parachutes at the same time. Which person will get to a state of zero acceleration first?
- the light woman
 - the heavy man
 - both should arrive at the same time
 - not enough information

19. A skydiver steps from a helicopter and falls for a few seconds until he reaches his terminal velocity. Thereafter, until he opens his parachute, his acceleration
- is constant
 - increases
 - decreases
 - is zero
 - none of these
20. A person is attracted toward the center of the Earth by a 500-N gravitation force. The Earth is attracted toward the person with a force of
- zero
 - 250 N
 - 500 N
 - 1000 N
21. A player hits a ball with a bat. The action force is the impact of the bat against the ball. The reaction to this force is the
- air resistance on the ball
 - weight of the ball
 - force that the ball exerts on the bat.
 - grip of the player's hand against the bat
 - the weight of the bat
22. Arnold Strongman and Suzie Small each pull very hard on opposite end of a massless rope in a tug-of-war. The greater force on the rope is exerted by
- Arnold, of course
 - Suzie, surprisingly
 - both the same, interestingly enough
23. A piece of rope is pulled by two people in a tug-of-war. Each pulls with 400 N of force. What is the tension in the rope?
- zero
 - 400 N
 - 600 N
 - 800 N
 - none of these
24. Two people, one twice as massive as the other, attempt a tug-of-war with 12 meters of massless rope on frictionless ice. After a brief period of time they meet. The heavier person slides a distance of
- 3 m
 - 4 m
 - 6 m
 - 0 m
25. A ball is moving at 3 m/s and has a momentum of 48 kg m/s. What is the balls mass?
- 4 kg
 - 12 kg
 - 16 kg
 - 144 kg
 - none of these
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26. Two billiard balls having the same mass and speed roll toward each other. What is their combined momentum after they meet?
- 0
 - half the sum of their original momentums
 - twice the sum of the original momentums
 - impossible to determine without addition info
27. According to the impulse-momentum equation $F\Delta t = \Delta(mv)$, a person will suffer less injury falling on a wooden floor which "gives" than on a more rigid cement floor. The "F" in the above equation stands for the force exerted on the
- person
 - floor
 - either the force on the person or the force on the floor
 - the sum of the force on the person and the force on the floor

28. Consider massive gliders that slide friction-free along a horizontal air track. Glider A has a mass of 1 kg, a speed of 1 m/s, and collides with Glider B that has a mass of 5 kg and is at rest. If they stick together upon collision, their speed after collision will be
- a. $\frac{1}{4}$ m/s
 - b. $\frac{1}{5}$ m/s
 - c. $\frac{1}{6}$ m/s
 - d. 1 m/s
 - e. none of these
29. A sandbag is motionless in outer space. A second sandbag with 3 times the mass moving at 12 m/s collides with it. They stick together and move at a speed of
- a. 3 m/s
 - b. 4 m/s
 - c. 6 m/s
 - d. 8 m/s
 - e. none of these
30. Wade pushes Peter, who is asleep. Peter
- a. will inevitably push Wade when he wakes
 - b. pushes Wade immediately, but not as hard
 - c. does not push even after he wakes up
 - d. pushes Wade equally hard even without waking