

Physical Science Test

CH 12 Gravity, Friction, Pressure

Directions: Match the word on the right with the best description on the left. Write your answer on the answer sheet. (1pt each)

1. _____ Falling under the influence of gravity only.
2. _____ The gravitational force exerted on one object's mass by another object's mass.
3. _____ A force that resists the motion between two surfaces in contact.
4. _____ A measure of how much force is acting on a certain area
5. _____ Friction due to air
6. _____ Upward force on objects in a fluid.
7. _____ The motion of objects moving in 2 dimensions (vertical & horizontal) under the influence of gravity only.
8. _____ Principle that states that when pressure is applied to a fluid in a container, the pressure is transmitted throughout the fluid with equal strength.
9. _____ The force that objects exert on each other because of their masses; This force is directly proportional to the product of 2 masses and inversely proportional to the distance between them squared.

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| a. Air resistance |
| b. Buoyancy force |
| c. Free fall |
| d. Friction |
| e. Gravity |
| f. Pressure |
| g. Projectile motion |
| h. Weight |
| i. Bernoulli's Principle |
| j. Pascale's Principle |

Directions: Choose the letter of the word or phrase that best answers the question or completes the statement. (1pt each)

10. Astronauts "float" when inside an orbiting spaceship because they are
 - a) weightless
 - b) in a vacuum
 - c) in free fall
 - d) outside Earth's gravity
11. Which is an example of **projectile motion**?
 - a) a rolling bowling ball
 - b) a dart thrown at a dart board
 - c) a balloon rising in the air
 - d) a high-speed train accelerating
12. Gravitational force between two masses _____ as the masses increase and rapidly _____ as the distance between the masses increase.
 - a) increases; increases
 - b) increases; decreases
 - c) decreases; decreases
 - d) decreases; increases

13. A satellite in orbit
 - a) Is not affected by gravity
 - b) Is always falling toward Earth
 - c) Must have a speed less than 8000m/s
 - d) Cannot fall more than 5m
14. Which of the following would increase friction between a couch and the floor?
 - a) Pushing the couch faster
 - b) Taking heavy objects off the couch
 - c) Pushing the couch slower
 - d) Putting heavy objects on the couch
15. Air resistance increases with
 - a) Decreased speed and decreased surface area
 - b) Increased speed and increased surface area
 - c) Decreased speed and increased surface area
 - d) Increased speed and decreased surface area
16. As you climb down a mountain
 - a) Air pressure increases
 - b) Air pressure decreases
 - c) Gravity increases
 - d) Gravity decreases
17. According to Bernoulli's Principle, smoke will better be sucked up a chimney when
 - a) The wind outside is moving slower
 - b) The wind outside is moving faster
 - c) The chimney is built wider
 - d) Smoke always exits a chimney the same

Problem Solving: Solve the following problems. Show your equation, plug in your numbers and complete the correct answer with the correct units.

18. How much does a 59.0kg woman weight on Earth? (2pts)
19. A bag of sugar has a mass of 2.26 kg. What would the weight of this bag of sugar be on Jupiter where the acceleration due to gravity is 2.64 times that on Earth? (2pts)
20. What pressure is exerted when a force of 75N is applied to a container with an area of 6.04m². (2pts)
21. A forestry worker accidentally strikes a pipe with the end of a pickaxe while trying to dig a hole. If the pickaxe strikes with a force of 2000N and the end of the pickaxe measures 0.02 m by 0.01 m, how much pressure is exerted on the pipe by the pickaxe? (2.5pts)
22. What is the weight of the snow that exerts a pressure of 3300Pa on a roof that has an area of 223m². (2pts)

Extended Response: Answer each of the following questions. Be sure to thoroughly explain and answer each part of the questions.

23. Compare and Contrast the force of friction between surfaces and the force of air resistance? Describe in what way each force acts and what affects the strength of each force. (4pts)

24. Describe the factors that influence friction between surfaces. List an example in real life when one would want to increase friction and a situation in which one would like to decrease friction. Explain how one could get the desired result in each situation. (3pts)