

Physical Science Worksheet: Chapters 12 and 13

Multiple Choice

1. A boy pushes on a parked car with a force of 200 N. The car does not move. How much work does the boy do on the car?
A) 200 N B) 200 J C) zero D) can't be determined
2. What are the units of work?
A) J B) N•m C) kg•m²/s² D) All of the above
3. Which of the following processes requires the most work?
A) A 10 kg weight rests on a table. B) A person holds a 1 kg weight still with outstretched arms. C) A person lifts a 1 kg weight 1 m off the floor. D) A 10 kg ball is rolled across the floor at a constant speed for a distance of 10 m.
4. A man pushes a crate along a factory floor by exerting a force of 55 N. If the crate moves a distance of 4.0 m, how much work does the man perform?
A) 165 N B) 220 N C) zero D) 145 J
5. What are the units of power?
A) watts B) horsepower C) joules per second D) All of the above
6. A weightlifter presses a 400 N weight 0.5 m over his head in 2 seconds. What is the power of the weightlifter?
A) 100 N B) 25 watts C) 400 watts D) 100 watts
7. What is the mechanical advantage of a ramp that is 10 meters long and 2 meters high?
A) 20 B) 5 C) 8 D) 15
8. A machine is a device that
A) requires less work to do a given task. B) decreases the amount of work done by a given force. C) increases energy. D) can multiply and change the direction of an input force.
9. A first-class lever has the
A) fulcrum at one end and the output force between the fulcrum and the input force. B) fulcrum at one end and the input force between the fulcrum and the output force. C) fulcrum in the middle. D) input force in the middle.
10. A wheelbarrow is an example of a
A) first-class lever. B) second-class lever. C) third-class lever. D) fourth-class lever.
11. Which of the following is an example of a third-class lever?
A) a nutcracker B) a hand-held boat paddle C) a crow bar D) a screw
12. Which of the following is not a simple machine?
A) a lever B) a pair of scissors C) a screw D) a wheel and axle
13. What is the mechanical advantage of a single fixed pulley?
A) 1 B) 1.5 C) 2 D) 3
14. What is the mechanical advantage of a single movable pulley?
A) 1 B) 1.5 C) 2 D) 3
15. Which of the following is an example of a wheel and axle?
A) a block and tackle B) a pulley C) a screwdriver D) a nutcracker
16. An inclined plane
A) changes the direction of the force only. B) changes the magnitude of the force only. C) changes both the magnitude and the direction of the force. D) decreases the amount of work done.
17. Which of the following is not in the inclined plane family?
A) a wedge B) a screw C) a ramp D) a wheel and axle
18. Which of the following is a compound machine?
A) a wheel and axle B) a pulley C) a pair of pliers D) a ramp
19. Which of the following statements about work and energy is not true?
A) When work is done, energy is transferred or transformed. B) Energy may be defined as the ability to do work. C) Work and energy are always equal. D) Work and energy have the same units.
20. What is the gravitational potential energy of a 55 kg box that is 8.0 m above the ground?
A) 5500 J B) 3400 J C) 4300 J D) 550 J
21. Gravitational potential energy depends on the
A) the mass of the object. B) the height of the object. C) the acceleration due to gravity. D) All of the above
22. A medicine ball has a mass of 5 kg and is thrown with a speed of 2 m/s. What is its kinetic energy?
A) 100 J B) 10 J C) 2000 J D) 500 J
23. Which of the following is an example of mechanical energy?
A) nuclear energy B) chemical energy C) potential energy D) light energy