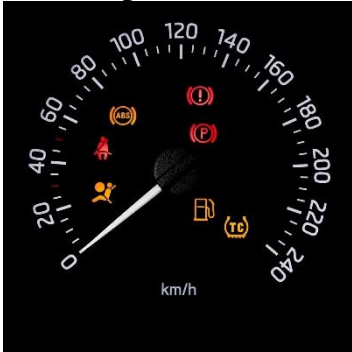


1. A roller coaster accelerates from an initial velocity of 6.0 m/s to a final velocity of 70 m/s over 4 seconds. What's the acceleration?



- A. 24 m/s²
- B. 18 m/s²
- C. 16 m/s²
- D. 16 m/s

2. The speedometer on your car measures



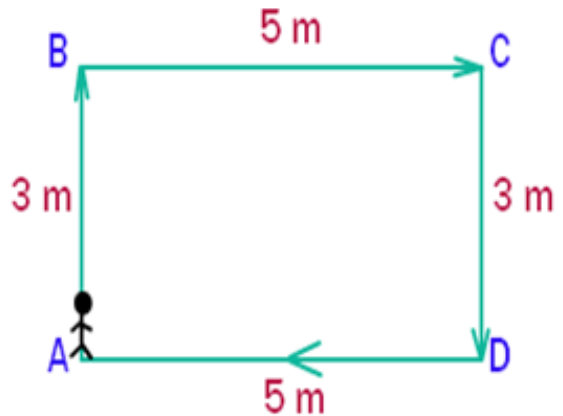
- A. Average speed.
- B. Average velocity
- C. Instantaneous speed.
- D. Instantaneous velocity.

3. You and your friend are both standing on a building while both holding a ball. Your friend drops the ball and you throw the ball horizontally (straight line, no angle). Which ball hits the ground first?



- A. The dropped ball
- B. Both land at the same time
- C. The thrown ball
- D. Trick question. Neither ball landed because it was a dream!

4. Fred walks in the following order: from Point A-B-C-D. The DISTANCE Fred walked is ____ meters and his Net DISPLACEMENT is ____ meters.



- A. 11 m; 16 m
- B. 16 m; 0 m
- C. 0 m; 16 m
- D. 16 m; 8 m

5. A cat chases a laser around in a circle and runs 120 meters while staying in the same position/location. What is the cat's Net Displacement?



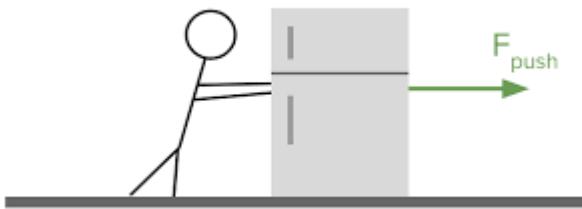
- A. 120 m
- B. 0 m
- C. 240 m
- D. 720 m

6. An automobile you are riding in suddenly stops, but you continue to go forward.



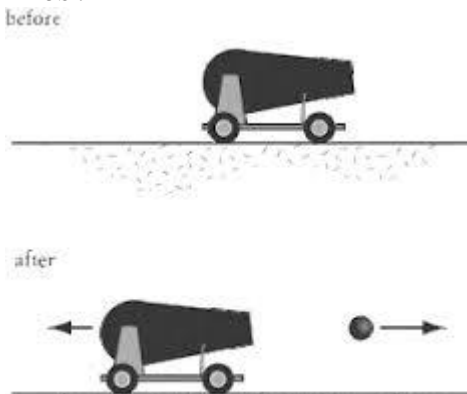
- A. Newton's 1st Law of Motion
- B. Newton's 2nd Law of Motion
- C. Newton's 3rd Law of Motion
- D. None of them

7. What is the acceleration of a 30 kg object pushed with a force of 2400 newtons?



- A. 400 m/s^2
- B. $72,000 \text{ m/s}^2$
- C. 80 m/s^2
- D. 225 m/s^2

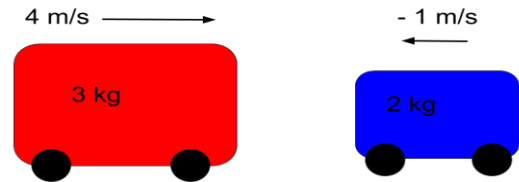
8. Why does a cannon recoil (move in the opposite direction of the cannonball) when it fires?



- A. The cannon has more momentum than the cannonball
- B. The cannon has less momentum than the cannonball

- C. The cannonball pushes back on the cannon with the same force the cannon pushes forward on the cannonball
- D. The cannon and cannonball have the same mass

9. What is the TOTAL MOMENTUM for the system BEFORE COLLISION?



- A. $14 \text{ Kg} \times \text{m/s}$
- B. $10 \text{ Kg} \times \text{m/s}$
- C. $24 \text{ Kg} \times \text{m/s}$
- D. $-24 \text{ Kg} \times \text{m/s}$

10. Compared to your weight and mass on Earth, if you were on the moon:



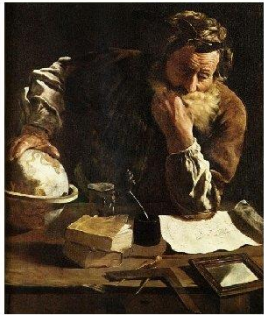
- A. Your weight and mass would be less.
- B. Your weight would be less but your mass would remain the same.
- C. Your weight would remain the same, but your mass would be less.
- D. Your weight would be greater, but your mass would remain the same.

11. A 5 Kg gun fires a bullet of 15 grams at a velocity of 1000 m/s to the right. What is the velocity of recoil of the gun in m/s?

- A. 3
- B. 4
- C. 5
- D. 6

12. Archimedes used density to discover if the crown of gold was real because

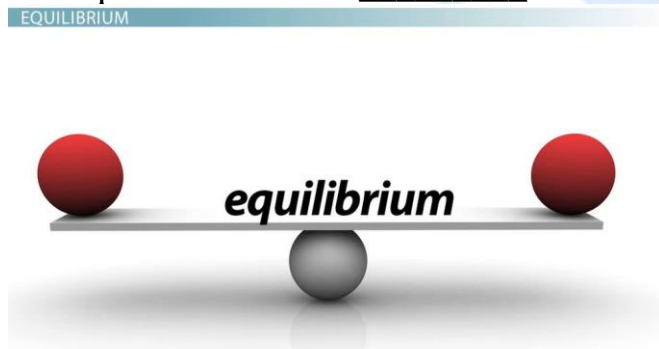
Archimedes and the Golden Crown



In 247BC Archimedes was ordered by King Hieron of Syracuse to determine if his new crown was pure gold

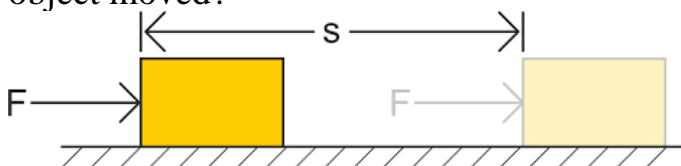
- A. Substances have their own unique densities
- B. Substances can change densities depending on their size
- C. Substances can change densities depending on their mass
- D. Substances can change densities depending on their volume

13. Equilibrium means _____



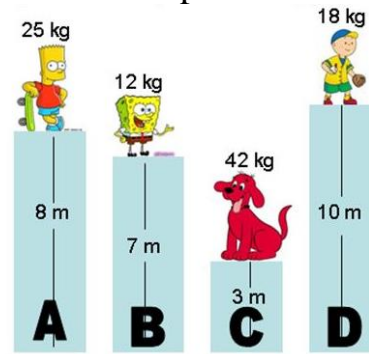
- A. Being at rest
- B. Traveling at light speed
- C. Balance
- D. Pushing or pulling

14. You exert 500 J of work by pulling on an object with 20 N of force. What distance is the object moved?



- A. 40 m
- B. 25 m
- C. 20 m
- D. 1,000 m

15. Which character has the greatest gravitational potential energy?

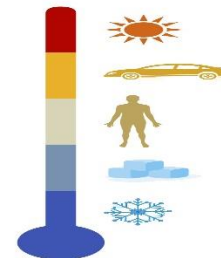


- A. Character A
- B. Character B
- C. Character C
- D. Character D

16. Power is

- A. The ability to do work.
- B. The rate at which work is done.
- C. The force applied to an object for a distance.
- D. None of the above.

17. Temperature of an iron rod is 104 F. Its temperature in centigrade



- A. 40 C
- B. 42 C
- C. 50 C
- D. 52 C

18. How does heat move?



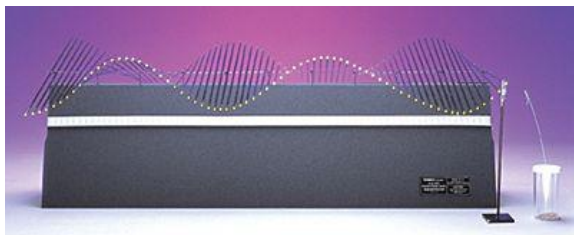
HEAT



TEMPERATURE

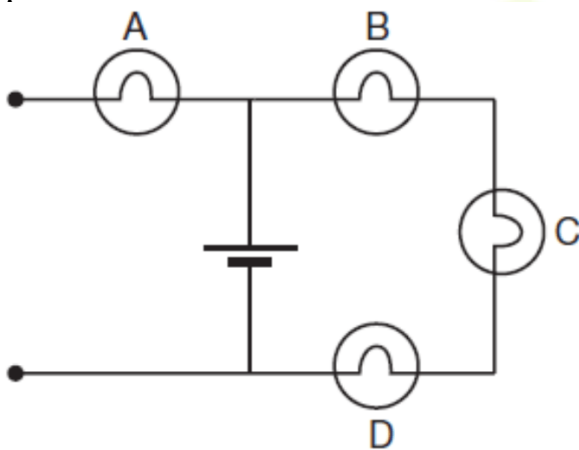
- A. From a warmer to a cooler object
- B. From a cooler to a warmer object
- C. Toward a hot object
- D. Away from a cold object

19. A wave machine generated waves with a wavelength of 0.4 m at a constant wave speed of 64 m/s. Calculate the frequency of the waves.



- A. 160 Hz
- B. 25.6 Hz
- C. 240 Hz
- D. 260 Hz

20. Which light globe(s) would never light up?



- A. A
- B. B,C,D
- C. A,B,C,D
- D. D

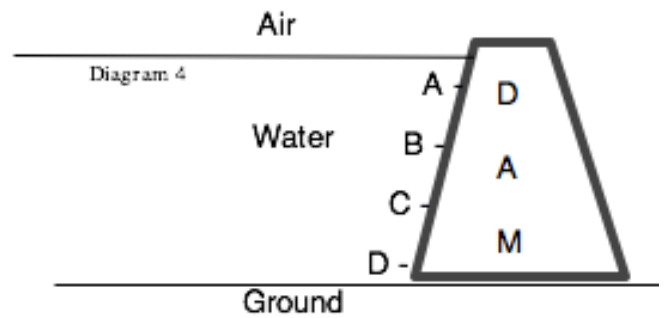
21. Calculate the charge in Coulomb that passes a point in 20 seconds if 500mA flows for this time.

Answer:

22. A load has 8.0 A of current and a voltage drop of 96.0 V. What is the resistance of the load in ohm?

Answer:

23. Where is pressure the greatest on the dam? Point



Answer:

24. A crane lifts an 12-m long steel girder weighing 1400 N up 25 m off the ground. The crane did J of work.



Answer:

25. The specific heat of aluminum is 0.21 cal/g°C. How much heat(Q) is released when a 10 g piece of aluminum foil is taken out of the oven and cools from 100° to 50°? cal

Answer: