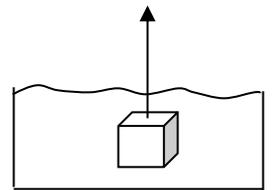


Choose the only correct answer of the multiple choice questions.

- Which statement is true for the net force acting on an object?
 - The applied net force and the displacement have the same direction.
 - The applied net force and the velocity have the same direction.
 - The applied net force and the acceleration have the same direction.
- A ball is thrown vertically upward. Which statement is true for the ball?
 - When the ball is moving upward, its acceleration is directed upward, while it is falling, its acceleration is directed downward.
 - It is moving with uniform velocity (constant in magnitude and direction).
 - Its acceleration is always directed downward.
- A metal cube is immersed fully in water and it is held above the bottom of the tank by a string, in which the tension is 60 N. Which statement is true?
 - The weight of the cube is 60 N.
 - The weight of the cube is more than 60 N.
 - The weight of the cube is less than 60 N.
- An ideal gas fills a container. If its temperature is doubled and the gas is allowed to expand to twice its original volume. How will its pressure change?
 - It does not change.
 - It will be doubled.
 - It will be 4 times greater.
- Which of the following statements is false?
 - In the α -decay the mass number changes with one.
 - In the β -decay a neutral particle is also emitted.
 - In the β -decay the atomic number may decrease by 1.



Definition

Give the exact definition of the following. If you write an equation, interpret the variables.

Elastic collision:

Calculation

A cart with a weight of 500 N is pushed by a worker with a horizontal force of 100 N. What is the acceleration of the cart if friction is neglected? ($g = 10 \text{ m/s}^2$)