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Solution 1

Value of gravitational constant G on the earth and the moon is

= $6.67 \times 10^{-11}\ Nm^2/kg^2$

Note that the value of G always remains constant irrespective of the location.

Solution 2

Gravitational force is responsible for the moon revolving round the earth.

Solution 3

No, the acceleration produced in a freely falling body is independent of the mass of the body.

Solution 4

Johannes Kepler gave the three laws of planetary motion.

Solution 5

Newton explained the motion of planets on the basis of gravitational force between the sun and planets.

Solution 6

Kepler's law of periods states that: The cube of the mean distance of a planet from the sun is directly proportional to the square of time it takes to move around the sun.

Solution 7

Kepler's third law of planetary motion led Newton to establish the inverse-square rule for gravitational force between two bodies.

Solution 8

Extremely large mass of the earth.

Solution 9

Acceleration produced in a freely falling body, irrespective of its mass, is $9.8 m/s^2$

Solution 10

Gravitational force of the earth.

Solution 11

The gravitational force F between two bodies of masses M and m kept at a distance d from each other is :

The gravitational force F between two bodies of masses M and m kept at a distance d from each other is :

$$F = G \times \frac{m \times M}{d^2}$$

Here, Gravitational constant, $G=6.7 \times 10^{-11} Nm^2\ kg^{-2}$

Solution 12

Gravitational force is responsible for the earth revolving round the sun.

Solution 13

Gravitational force causes two objects lying apart attract each other.

Solution 14

Gravitational force (exerted mainly by the moon and to some extent by the sun) is involved in the formation of tides in the sea.

Solution 15

Gravitational force of the sun holds the solar system together.

Solution 16

Weight, W = m x g

= $1\ kg \times 9.8 m/s^2$=9.8 N

Solution 17
The weight of a body is directly proportional to its mass. It also depends on the acceleration due to gravity which varies from place to place.
Solution 18
Weight of the body varies with altitude; mass of an object is constant.
Solution 19
Its weight varies; mass of an object is constant.
Solution 20
Weight, W = m x g = 10 x 9.8 =98 N
Solution 21
Weight, W = m x g

Weight, W=m x g

$$\text{mass, } m = \frac{W}{g} = \frac{50}{9.8} = 5.102\text{kg}$$

Solution 22
Its weight will be zero as value of g is zero at the centre of the earth.
Solution 23
Weight, W= m x g =50 x 9.8=490N
Solution 24
Weight of the body on the surface of moon will be 1N approx. as the value of g on the surface of moon is one-sixth that of the earth.
Solution 25
(a) True
(b) False
(c) False
(d) False
(e) False

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Solution 26
(a) One-sixth
(b) Mass
(c) Six times
(d) One-sixth
(e) Six times
(f) 36N
Solution 27
This is the acceleration produced by the earth. It is also called acceleration due to gravity.
This is the acceleration produced by the earth. It is also called acceleration due to gravity.

$$g = G \times \frac{M}{R^2}$$

where, G= gravitational constant
M= mass of the earth.
R=radius of the earth

where, G= gravitational constant
M= mass of the earth.
R=radius of the earth

Solution 28
(a) The falling of a body from a height towards the earth under the gravitational force of the earth (with no other forces acting on it) is called free fall.
(b) No, acceleration is independent of the mass of the body during free fall.
Solution 29
Yes, Newton's third law of motion holds good for the force of gravitation. This means that when earth exerts a force of attraction on an object, then the object also exerts an equal force on the

earth, in the opposite direction.

Solution 30

The force of gravitation between two bodies is directly proportional to the product of their masses.

$F \propto m \times M$

Since the mass of cricket balls is very small as compared to that of the earth, so the force of gravitation between two cricket balls is extremely small while that between a ball and the earth is extremely large.

*********** END **********