PHYSICS

BOOKS - MAXIMUM PUBLICATION

GRAVITATION

Example

1. Lifting a small stone to a certain height and then dropping it downwards.

What do you observe?

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2. Lifting a small stone to a certain height and then dropping it downwards.

What could be the reason for the falling of the stone?

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3. Lifting a small stone to a certain height and then dropping it downwards.

What change takes place in the speed of the stone as it is thrown up?

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4. Lifting a small stone to a certain height and then dropping it downwards.

What about the speed when it falls down?

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5. Lifting a small stone to a certain height and then dropping it downwards.

Did you apply any force on the stone to bring it down?

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6. Lifting a small stone to a certain height and then dropping it downwards.

From where did the stone get the force for the acceleration?

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7. The stone tied to a thread is suspending from a spring balance.

What do you observe?

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8. The stone tied to a thread is suspending from a spring balance.

The spring stretched down when the stone was suspended from it. Why?

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9. The stone tied to a thread is suspending from a spring balance.

Write down instances where the force of gravity is felt.

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10. Weighing a stone of lower mass and another of higher mass by using a spring

balance.

[Mass of a body is the amount of matter contained in it]

In which case was the reading higher?

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11. Weighing a stone of lower mass and another of higher mass by using a spring balance.

[Mass of a body is the amount of matter contained in it]

Which of the stones experienced greater force of attraction of the earth?

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12. Weighing a stone of lower mass and another of higher mass by using a spring balance.

[Mass of a body is the amount of matter contained in it]

On the basis of these observations, find out

the factor that influences the force of attraction from the earth.

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13. Two bodies are at a speCific distance so as to attract each other. Now many times will the mutual force of attraction be if the mass of one of them is doubled?

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14. What if the mass of both the bodies are doubled?

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15. What if the distance between the bodies is doubled?

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16. What happens when the distance between the bodies is halved?

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17. Why two children sitting close to each other do not come closer due to mutual force of attraction?

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18. A body of mass 50 kg and another body of mass 60 kg are separated by a distance of 2 m. What is the force of attraction between them?

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19. Is the earth really spherical in shape?

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20. Is the radius of the earth the same everywhere?

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21. Where on the surface of the earth is the radius maximum?

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22. Where is it minimum?

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23. At which part of the earth must a body be placed so that it will experience the maximum force of attraction? Where the radius is large/where the radius is small?

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24. What change occurs in the force of attraction, if a body is being continuously

raised from the surface of the earth?

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25. Suppose if the body is moved from the surface of the earth to the centre. What happens?

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26. Find the factors affecting the value of g?

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27. The earth is not a perfect sphere, its radius is not the same everywhere If so, will the value of g be the same everywhere on earth?

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28. Where will the value of g be the maximum on the earth's surface?

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29. Where g will it be the minimum?

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30. Value of 'g' at the centre of the earth is _____

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31. When a stone of mass 50 kg and another of mass 5 kg fall down simultaneously form the

top of a five storey building, which one will reach the ground first?

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32. A stone and a sheet of paper are dropped.together. Which of the following statements regarding their tall is true?

- Both of them reach simultaneously

- The paper reaches first

- The stone reaches first

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33. When a stone falls, it attract the earth just as the earth attracts the stone. But it is only the stone that falls, the earth does not rise up. Give reason?

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34. A stone falls down from the top of a wall in 1 s to the ground ($g = 10\frac{m}{s^2}$)

What is the speed of the stone just before it touches the ground?

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35. A stone falls down from the top of a wall in 1 s to the ground ($g = 10\frac{m}{s^2}$)

Calculate the average speed when the stone is falling down

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36. A stone falls down from the top of a wall in 1 s to the ground ($g = 10\frac{m}{s^2}$)

How much is the height of the wall?

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37. A ball thrown vertically upward reached a maximum height of 20m

What was the velocity of the stone at the instant of throwing up?

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38. A ball thrown vertically upward reached a maximum height of 20m

How much time did the ball take to reach the height 20 m?

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39. Where does a body experience maximum weight on the earth? What is the reason?

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40. Where on the earth does a body experience minimum weight? What is the reason?

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41. What will be the weight of a body at the centre of earth.

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42. Find out the weight of a body of mass 20 kg. Express the Value in newton.

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43. Suppose a spring balance with a body suspended from it is allowed to fall. What will be the reading shown by the balance?

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44. While on a gaint wheel ride, a person experiences loss of weight on the descent. Why?

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45. Why does a freely falling body experience weightlessneSs? Note it down in your science diary.

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46. What is the weight of a body of mass 10 kg?

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47. If this body is allowed to fall freely, will there be any change in the force experienced by the body?

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48. Drill a hole at the bottom of an open bottle and fill it with water. Water goes out through the hole. Then allow the bottle to fall freely. What do you observe?

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49. If the distance between two bodies that attract each other is trebled, how many times will their mutual force of attraction be? (9 time, 3 times, $\frac{1}{3}$, $\frac{1}{9}$)

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50. A body, the mass and the weight of which were already determined at the Equator, is now placed at the Pole. In this context, choose the correct statement from the following:

A. Mass does not change, weight is maximum

B. Mass does not change, weight is minimum

C. Both mass and weight are maximum

D. Both mass and weight are minium

Answer: A

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51. The mass of the earth is 6×10^{24} kg and that of the moon is7.4×10^{22} kg. If the distance between the earth and the moon is 3.84×10^{5} km, calculate the force exerted by the earth on the moon. (Take G $= 6.7 \times 10^{-11} Nm^{2} kg^{-2}$)

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52. What is meant by the terms mass and weight?

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53. Are they vector of scalar quantities? Why?

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54. The mass of a body is 30 kg. What is its weight on earth? ($g = 9.8m/s^2$)

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55. The mass of a body is 30kg.What is its weight on the moon? ($g = 1.62m/s^2$)

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56. If a body of mass 40 kg is kept at a distance of 0.5 m from a body of mass 60 kg, what is the mutual force of attraction between them?

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57. How the mass and distance between objects affects gravitational force?

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58. Mass and weight of a body is determined at the pole and at the equator

Is there any difference in the mass?

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59. Mass and weight of a body is determined at the pole and at the equator

Is there any change in the weight?

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60. Mass and weight of a body is determined at the pole and at the equator

Justify the answer

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61. Fill in the blanks.

Acceleration due to gravity does not affect the ..... of the object

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62. Fill in the blanks.

1 kg wt = ...N

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63. What is mean by free fall?

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64. Weight of an object in free fall is zero? Why.

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65. Drill a hole at the bottom of an open bottle and fill it with water. Water goes out through the hole. Then allow the bottle to fall freely. What do you observe?

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66. Correct the following.

Force of attraction increases when an object is raised from earth's surface

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67. Correct the following.

Value of g remains the same on all regions of earth.

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68. Calculate the weight of a body in the moon if it weights 150 kg in earth?

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69. What will be the weight of a body at the centre of earth.

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70. State Universal Law of gravitation?

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71. The dimensions of universal gravitational constant are

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72. Mention each letter of gravitation indicates to what?

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73. How the mass and distance between objects affects gravitational force?

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74. List the situations in which gravitational force experiences.