Class Notes	
Class : IX	**Topics:** Gravitation Worksheet
Subject: Physics	**Prepared by:** ADP

Answer the following questions:

1. State the significance of universal law of gravitation.

2. The value of gravitational constant G on earth is 6.67×10^{-11} Nm^2/kg^2. What is its value on the surface of moon?

3. Two objects of masses m_1 and m_2 are dropped in vacuum from a height above the surface of earth ($m_1 > m_2$). Which one will reach the ground first? Justify your answer.

4. State the name and type of force which is responsible for holding the solar system together.

5. Which force is responsible for acceleration of a body in free fall?

6. A cricket ball thrown vertically upwards, reaches a maximum height of 5 metres. Find the initial speed of the ball. ($g = 9.8$ m/s^2).

7. What will be the mass and weight of a body at the centre of the earth as compared to other places on the earth?

8. If the weight of a body on the earth is 6 N, what will it be on the moon? (Given that acceleration due to gravity on moon is $1/6^{th}$ of that on the earth.)

9. State universal law of gravitation. How the force between the two bodies is affected if the distance between them is tripled?

10. If the distance between two bodies is increased by 4 times, by what factor should the mass of the bodies be altered so that gravitational force between them remains the same?

11. What is the force between two spheres each weighing 20 kg and separated by 50 cm?

12. A sphere of mass 40 kg is being attracted by another sphere of mass 15 kg when they are 0.2 cm apart with a force of $9.8 \times 10^{-7} N$. Calculate the value of G.

13. A planet has mass and radius $1/3^{rd}$ those of earth. Calculate the acceleration due to gravity on the planet and compare it with that of earth. If a body of mass 5 kg is taken to the planet, what will be its weight there?

14. A ball is thrown vertically upward with a velocity of 49 m/s. Calculate:
    i) The maximum height to which it rises.
    ii) The total time it takes to return to the earth.

15. A man weighs 637 N on earth. Find his mass. If he is taken to moon, find his approximate weight

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