

National Institute of Open Schooling
Secondary: Science and Technology
Lesson 11 – Gravitation
Worksheet-11

1. It is our everyday experience that bodies thrown vertically upward come back to the earth. Even if an object is dropped from some height, it falls towards the earth. Similarly tree leaves and fruits fall toward the earth when they are separated from the branches. Explain why does it happen so? Is it same for all objects?
2. It is well known phenomenon that bodies fall towards the earth due to force of gravity. If the earth can attract an apple or a stone, can it also attract the moon or any other planet?
 - a) If Yes, Support your answer with reasons.
 - b) If No, Support your answer with reasons.
3. Continue to Q2, explain the force which is responsible for keeping the planets go around the sun in their orbits and moon around the earth.
4. It is well known phenomenon that g is constant near the surface of earth. Therefore, all the equations for uniformly accelerated motion of bodies become valid when acceleration 'a' is replaced by 'g'. Write down the modified equations of motion.
5. In general Mass and Weight are considered same. But in Physics both are different. Differentiate between Mass and Weight and write their Units. Also explain the term weightlessness.
6. Suppose you are standing on a weighing machine in a lift. If the lift is going down with a downward acceleration of 9 ms^{-2} , what would be the reading of the weighing machine? Take $g = 10 \text{ ms}^{-2}$. Justify your answer with explanation.
7. The force with which an object is pulled towards the earth is called its weight. Comment why weight of any object on the Moon is $1/6$ times that on the earth?

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8. Refer to Q7 and comment
 - a) Is the mass of an object stay constant wherever the body may be situated in the universe?
 - b) Is the weight of an object stays constant wherever the body may be situated in the universe?
 - c) Is the weight of an object stays constant wherever the body may be situated on earth?
 - d) What will be the weight of an object at centre of earth of radius R ?
9. Perform an activity for understanding the concept of Buoyancy. Describe the activity in your own words and explain the term buoyancy or buoyant force.
10. State Archimedes' principle. Observe your surroundings and write applications of Archimedes' principle in day to day life.