KALPAVRUKSHA MODEL SCHOOL

Answers of Online class Assignments-2

Class: VIII **Sub: Physics** **Date: 3.9.2021**

Topic: PRESSURE

I .Answer the following questions:

1. **What happens when we try to push an inflated balloon into a bucket of water?**
   ANS: If you try pushing an inflated balloon into a bucket of water, you will find that as you try to push down the balloon, the water seems to be pushing it back upward. If you stop pushing the balloon, the balloon will be pushed back to the surface. This is because the water in the bucket exerts pressure on the balloon.

2. **How would you show that liquids exert pressure in all directions?**
   ANS: Take an empty metallic can. Pour some water in the can and heat it (without cap) until water begins to boil. When the water starts boiling, the steam is formed. It pushes out air from the can. When the steam starts coming out continuously from the mouth of the can, stop heating and immediately put the cap back. Remove the can form the burner and pour cold water on the can. You will notice that the can gets crushed from all sides. It is because on pouring cold water, steam inside the can immediately changes into water, leaving a partial vacuum inside the can. As a result of the excess atmospheric pressure outside, the can crushes it inwards. This shows that air exerts huge pressure in all directions.

3. **You are standing in a queue. The person immediately in front of you steps back and accidentally stomps on your foot with the heel of one shoe. Would you be more hurt if this person were**
   i] a woman wearing normal flat-soled shoes or
   ii] a woman wearing high-heeled shoes? Explain your answer.
   ANS: No, women wearing normal flat-soled shoes will not be hurt but women wearing high-heeled shoes because smaller the area surface that much greater is the pressure.

4. **Pressure depends on two main factors. Explain them.**
   ANS: (1) It depends on force applied.
   (2) Area over which force acts. The same force can produce different pressure depending upon the area in which it acts.

5. Describe any two applications of pressure.

ANS: a) While cutting an apple, we need to use the sharp edge of the knife. Using the blunt edge of a knife shall not serve the purpose. The blunt edge of the knife has larger surface area than the sharp edge. Due to smaller surface area; more pressure can be applied through the sharp edge of the knife and something can be easily cut.

b) While putting a nail into a wooden board, the pointed end of the nail is kept at the front. The pointed end of the nail has very small surface area and this enables us to apply a greater pressure with the applied force.

6. What is the force needed to produce a pressure of 1 Pascal over a square area of side 2m?

ANS: Given Pressure= 1Pa

Side of a square is $2m=2mx2m=4m^2$

Area of a square = $a^2 = 4m^2$

Force = Pressure × Area = 1 × 4 = 4N

7. Over what area should a force of 100N act to produce a pressure of 500 Pascal?

ANS: Given Force = 100N

Pressure = 500Pa Area=?

Area=Force/Pressure=100/500=0.2 m^2

8. Explain why, porters place a thick round piece of cloth on their heads when they have to carry heavy loads.

ANS: By placing the thick round piece of cloth on their head, the porter increases the area of contact of load with their head. Now the force of load falls on the larger area due to which the pressure on the head decreases and it becomes easier for a porter to carry the heavy load.

9. Explain why balloons burst when too much air is blown into it.

ANS: The balloon inflates due to the pressure of the air inside it. If you fill too much air in the balloon, the balloon bursts because the pressure on the walls of the balloon increases beyond which its walls can withstand. Air also has weight and hence exerts pressure in both upward and downward direction.

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