Sabaragmuwa Provincial Department of Education – Week School

Subject - Science

Week - September II

Grade - 10

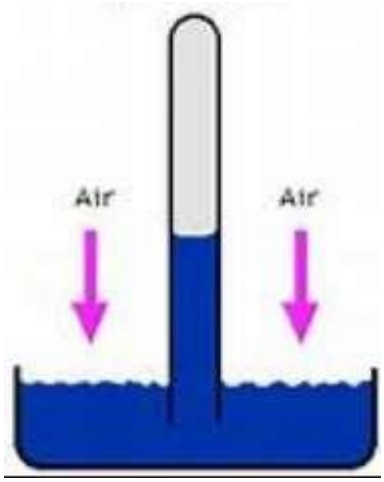
Translated by – Ms. Damayanthi Yapa, Kg/ Dehi/ Rajasingha Central College & Ms. M. Hemachandra, Kg/Dehi/Dehiowita National School

Hydrostatic Pressure and its applications

The pilgrims who climb the holy mountain, ***Sri Pada*** cover their ears using caps.

1. Why do they cover their ears?

2. The barometer given by the diagram is carried to the top of the ***Sri Pada*** mountain. The height of the mercury column was 56cm at that elevation. Calculate the atmospheric pressure in that day at the peak. (Density of mercury = 13600kgm^{-3}, the Acceleration of gravity = 10 ms^{-2})



3. Complete the table given below.

Instance	How the atmospheric pressure acts
(i) While drinking with a straw. (ii) Siphoning water from a fish tank. (iii) Acton of the rubber sucker.	

4. Do the activity given below and state the observation and conclusion.

Requirements : A basin of water, A rubber ball

Method : Release the rubber ball to the basin of water.
Take the rubber ball deep in the water and release it.

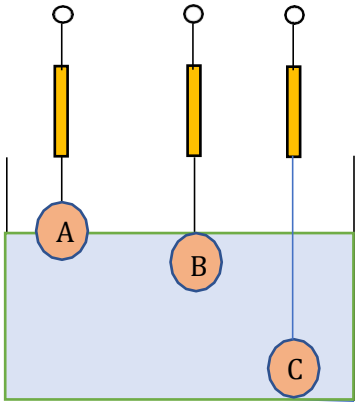
Observation (i)……

Observation (ii)……
Conclusion……

5. Propose an activity to show when an object is partially or completely submerged in a fluid, the upthrust acting on it is equal to the weight of the fluid displaced by the object.

6. The following is an activity designed by a student.

Materials :- (A) An air filled ball (B) A water filled ball (C) A sand filled ball (D) A spring balance



The table below shows some of the data obtained by the student from the above activity. Fill in the blanks.

Object	Weight of the object (N)	Apparent weight of object in water (N)	How the object appeared in water	Upthrust (N)
A	1.1	0	i …….. ……..	1.1
B	1.8	0	Fully submerged and floating.	ii .....
C	2.4	0.5	iii ..... ……..	iv .....

7. Explain the conclusions that can be drawn from the above activity based on the three cases A, B and C (page 84 in your text book may help you.).

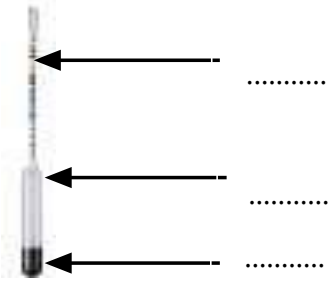
8. Write down the Archimedes principle introduced based the above phenomenon.

9. The weight of an object in the air is 25N. When it is completely submerged in water the visible weight is 5N.
   i. What is the upward thrust of water on the object?
   ii. When the object is completely submerged in water, what is the weight of the water that it displaces?

The hydrometer is made based on Archimedes' Law. When a hydrometer is immersed in a liquid, the hydrometer is partially submerged and floated in the liquid until an upward thrust which is applied by the liquid equals to hydrometer's weight.

10. What is the physical quantity of liquids measured using the hydrometer?

11. Name the parts of the hydrometer.



12. Comment on this photo given below, by applying the concept of upward thrust.