



PHYSICS

NCERT - NCERT PHYSICS(GUJRATI ENGLISH)

FLOATING BODIES

Example

1. What is the effective density of the maxture of water and milk when

(i) they are taken with same masses

(ii) they are taken with same volumes



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Think And Discuss

1. Let us suppose you have two blocks and you do not know what material they are made of. The volume of one block is 30 cm^3 while the other is 60 cm^3 . The second block is heavier

than the first. Based on this information, can you tell which of the two blocks is denser?



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2. What would happen if the Toricelli experiment is done on moon?



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3. Why don't we use water instead of mercury in Torricelli experiment? If we are ready to do

this experiment, what length of tube is needed?



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4. Find the weight of the atmosphere around the earth (take the radius of earth as 6400km.)



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5. Why is it easier for you to float in salt water than in fresh water?



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6. Why is there no horizontal buoyant force on a submerged body?



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7. Two solid blocks of identical size are submerged in water. One block is iron and the other is aluminium. Upon which is the buoyant force greater?



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8. A piece of iron when placed on a block of wood, this makes the wood to float lower in the water. If the iron piece is suspended beneath the wood block, would it float at the same depth? Or lower or higher?

You know that pressure difference at different levels inside the liquid causes buoyancy.



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9. Can we increase the pressure inside the liquid?



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Reflections On Concepts

1. Why do some objects float on the water ?

And some sink (AS_1)



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2. Explain density and relative density and write their formulae. (AS_1)



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3. How can you find the relative density of a liquid ? (AS_1)



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4. Draw the diagram of a mercury barometer.

(AS_5)



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Application On Concepts

1. A solid sphere has a radius of 2 cm and a mass of 0.05kg . What is the relative density of the sphere? (AS_1)



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2. A small bottle weight 20 g when empty and 22 g when filled with water. When it is filled with oil it weight 21.76g. What is the relative density of oil ?



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3. An ice cube floats on the surface of water filled in glass tumbler (density of ice = $0.9g/cm^3$). Will the water level in the

glass rise? When the ice melts completely

(AS_1)



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4. Find the pressure at a depth of 10 m in water if the atmospheric pressure is 100kPa.

[1Pa=1N//m] [100kPa=10⁵ Pa=10⁵ N//m² =1 atm.]



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5. How can you appreciate the technology of making ships those float on water using the material which sink in water ? (AS_6)



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Higher Order Thinking Questions

1. Can you make iron to float in water ? How ?
(AS_3)



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2. Where do you observe Archimedes principle in daily life ? Give two examples. (AS_7)



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3. Do all objects that sink in water, sink in oil ?
Give reason. (AS_1)



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Multiple Choice Questions

1. Unit of relative density is

A. g / cm^3

B. cm / g^3

C. N / m^2

D. No units

Answer:



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2. The instrument used to measure the purity of milk is

A. Barometer

B. Hygrometer

C. Lactometer

D. Speedometer

Answer:



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3. If $P_0 =$ Pressure, $n =$ Density, $h =$ height, and $g =$ acceleration due to gravity then the atmospheric pressure =

A. $P_0 = ngh$

B. $P = mgh$

C. $P = vgh$

D. $P = \frac{1}{2} mgh$

Answer:



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4. The first barometer with mercury was invented by

A. Pascal

B. Archimedis

C. Newton

D. Torricelli

Answer:



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5. The hydraulic jockey which is used in automobile work shops, works on the principle of

A. Archimedes

B. Pascal

C. Toreecelli

D. Newton

Answer:



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6. The density of water at $25^{\circ} C$ is

A. $1g / cm^3$

B. $2g / cm^3$

C. $3g / cm^3$

D. $0.99g / cm^3$

Answer:



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