

Question 1: Which of the following are matters?

Chair, air, love, smell, hate, almonds, thought, cold, cold-drink, smell of perfume.

Solution: Any things which have some weight and occupy space will come under category of matter. Chair, air, smell, almonds, cold-drink and smell of perfume: Matter

Question 2: Give reasons for the following observation

The smell of hot sizzling food reaches you several meters away, but to get the smell from cold food you have to go close.

Solution: Evaporation is directly proportional to temperature, means hot food evaporates easily. Diffusion of hot food vapor with air becomes very fast and can reach to a distant place within a very short time.

Question 3: A diver is able to cut through water in a swimming pool. Which property of matter does this observation show? Solution: The phenomena of cutting the water by the diver show that matter has space between its particles.

Question 4: What are the characteristics of the particles of matter?

Solution: Characteristics of particles of matter are given below: 1. Particles of matter have space between them. 2. Particles of matter are continuously moving. 3. Particles of matter have an attraction force between them. 4. Particles of matter are very small in size.

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Question 1: The mass per unit volume of a substance is called density. (Density = mass/volume). Arrange the following in order of increasing density— Air, exhaust from chimneys, honey, water, chalk, cotton and iron.

Solution: We can solve this question by keeping this concept in mind. The correct order of density for gas, liquid and solid are: Gas < Liquid < Solid. Thus,

Air, exhaust from chimneys water, honey, cotton, chalk, iron Gas
Liquid Solid ----->
Increasing order of Density

Question 2:

(a) Tabulate the differences in the characteristics of states of matter. (b) Comment upon the following: Rigidity, compressibility, fluidity, filling a gas container, shape, kinetic energy and density. www.ncrtsolutions.in

Solution: (a)Solid :

Solids have a definite volume. Solids do not tend to flow. Solids are rigid. Generally solids have a definite shape with very few exceptions like sponge, rubber band etc. Solids are generally incompressible with very few exceptions like sponge, rubber band etc. Liquid :

Liquids also have a definite volume. Liquids tend to flow. Liquids are not rigid. Liquids do not have a definite shape. They take the shape of the container. Liquids are almost incompressible.

Gases :

Gases do not have a definite volume. Their volume varies with the container in which they are stored or kept. Gases also tend to flow Gases are not rigid. Gases do not have a definite shape Gases are compressible.

(b)

Rigidity:Property by which an object retains its shape and size is called as rigidity. Solids are rigid whereas liquids and gases are not.

Compressibility: Compressibility is the property; due to which a substance can be compressed, means its volume can be decreased. Gases are compressible whereas solids and liquids are not.

Fluidity: Flowing tendency of a substance called fluidity. Gases and liquids are fluids, solids are not.

Filling a gas container: a large volume of gas can be filled in a gas container by compressing it under very high pressure. The property of compressibility (of gases) is very useful in this case

Shape:The property of having a definite geometry is called shape of a particular substance. Solids have a definite shape whereas gases and liquids do not have.

Kinetic energy: The energy possessed by a moving object or by the moving molecules is called kinetic energy. On increasing the temperature, kinetic energy of a substance (or its molecules) also increases. Molecules of gases possess highest kinetic energy.

Density : The mass per unit volume of a substance is called density.

$$\text{Mass Density} = \frac{\text{-----}}{\text{Volume}}$$