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Skip to content error: Content is protected !! + NCERT solutions for class 9 science chapter 1 Matter in Our Surroundings: If you are looking for solutions for NCERT class 9 science chapter 1 Matter in Our Surroundings then you are at the right place. This article contains step by step solutions to each question. The detailed NCERT solutions to all the exercise questions provided here will help you to understand the fundamental concepts involved in chapter 1 Matter in our Surroundings. As we know the matter is made up of particles and as we look at our surroundings, we see a large variety of things with different shapes, sizes, and texture. Through CBSE NCERT solutions for class 9 science chapter 1 Matter in Our Surroundings, you will be able to understand the questions and its concepts related to some important topics of this chapter. Latest : Trouble with homework? Post your queries of Maths and Science with step-by-step solutions instantly. Ask Mr AL 1.1 Physical Nature of Matter 1.1.1 Matter Is Made up of Particles 1.1.2 How Small Are These Particles of Matter? 1.2 Characteristics of Particles of Matter 1.2.1 Particles of Matter Have Space Between Them 1.2.2 Particles of Matter Are Continuously Moving 1.2.3 Particles of Matter Attract Each Other 1.3 States of Matter 1.3.1 the Solid State 1.3.2 the Liquid State 1.3.3 the Gaseous State 1.4 Can Matter Change Its State? 1.4.1 Effect of Change of Temperature 1.4.2 Effect of Change of Pressure 1.5 Evaporation 1.5.1 Factors Affecting Evaporation 1.5.2 How Does Evaporation Cause Cooling? NCERT solutions for class 9 science chapter 1 Matter in Our Surroundings: Solved In-text Questions Topic 1.2 Characteristics of particles of matter Q 1. Which of the following is matter? Chair, air, love, smell, hate, almonds, thought, cold, lemon water, the smell of perfume . Answer: Anything which has mass and occupies space is called matter. It is made up of particles. In the above question, chair, air, almonds, and lemon water are matters. And love, smell, hate, thought, cold and smell of perfume are not in the category of matters because they are feeling and emotion of human beings and do not acquires any space. Q 2.(b) Comment upon the following: rigidity, compressibility, fluidity, filling a gas container, shape, kinetic energy and density. Answer: Rigidity- The tendency of a substance to maintain their shape when subjected to an external force. Compressibility - It means the contraction in the volume of a substance under the applied pressure. Liquid and gas are compressible because they have empty space, but solid does not. Fluidity- The tendency of a particle to flow is known as fluidity. Liquids and gases can flow. Filling of a gas container- The gases can fill the container with a large amount when we applied external pressure. Shape- Solids have fixed shapes and boundaries. Liquid and gases have no fixed shape and definite boundaries. Kinetic energy- The energy possessed by particles due to their motion is known as kinetic energy. Gas has maximum kinetic energy as they have more random motion. Q 3. (b) Give reasons A gas exerts pressure on the walls of the container. Answer: A gas exerts pressure on the walls of the container because the molecules of the gas are continuously in random motion because of their high kinetic energy. So, that the molecules of gas vibrating and hitting on the walls of the container and as a result exerts pressure on walls. NCERT textbook solutions for class 9 science chapter 1 Matter in Our Surroundings Topic 1.4 Can matter change its state? Q 1. Convert the following temperature to Celsius scale: a. 300 K b. 573 K. Answer: It is known that, T K = Temperature in Kelvin and T C = temperature in Celsius. Therefore, (i) Temperature(C) = 300 - 273 = 27 (ii) Temperature (C) = 573 - 273 = 300 Q 2. What is the physical state of water at: a. 250°C b. 100°C Answer: The primary state of water is liquid at room temperature. It changes to the gaseous state above . At water (liquid) can be in equilibrium with the gaseous state. Hence, (i) At 250 physical state of water is gas. and, (ii) At 100 physical state of water can be gas as well as liquid. Q 4. Suggest a method to liquify atmospheric gases. Answer: The atmospheric gases are transferred into a cylinder with a piston attached on it. By cooling and applying external pressure(by pushing the piston) on them. This way gases can be liquified. CBSE NCERT solutions for class 9 science chapter 1 Matter in Our Surroundings Topic 1.5 Evaporation Q 1. Why does a desert cooler cool better on a hot dry day? Answer: A desert cooler cools better on a hot and dry day. It is because the inner walls of the cooler get sprinkled by the water continuously and due to warm, dry weather, this water gets evaporated. Evaporation cause cooling of the present air inside of the cooler. This cold air is sent in the room by a fan. Q 2. How does the water kept in an earthen pot (matka) become cool during summer? Answer: The water inside the earthen pot become cold during the summer because the earthen pot is porous with a lot of pores in it. So, water comes out on the surface of the earthen pot, and this water gets evaporated. And thus the temperature of water present inside the pot has a much lower temperature than outside, and hence water becomes cold. Q 5. What type of clothes should we wear in summer? Answer: We should wear light coloured cotton clothes because the light colours reflect the solar radiation and cotton cloths have more porosity so that it allows sweat through it to evaporate faster, thereby causing a cooling effect. Q 5. What is the physical state of water at- (a) 25°C (b) 0°C (c) 100°C ? Answer: The primary physical state of water is liquid. It converts into gaseous state at a temperature above 100 but at this temperature, it (liquid water) is in equilibrium with the gaseous state. And Below 0 it changes into solid and also at this temperature it (liquid water) is in equilibrium with the solid state. Therefore: (i) At 25 water is in the liquid state (ii) At 0 it can be liquid or solid and (iii) At 100 it can be liquids or the gaseous state. Q 9. Name A,B,C,D,E and F in the following diagram showing change in its state Answer: In the above flow chart- A = fusion/ melting/ liquefication B = Vaporisation/ evaporation C = Condensation (transformation of water from a gaseous state to liquid state) D = Solidification (the conversion of liquid into solid is known as solidification) E = F = Sublimation Direct conversion of solid into gas or gas into solid without attaining the liquid phase is called sublimation. NCERT Solutions for Class 9 Science- Chapter Wise NCERT Solutions for Class 9 - Subject Wise Key Features of NCERT solutions for class 9 science chapter 1 Matter in Our Surroundings: All the NCERT solutions for the class 9 are created by experienced faculties. These solutions are easy to understand. Solutions of the questions given in class 9 chapter 1 Matter in Our Surroundings are as per the CBSE guidelines. These NCERT solutions will assist you in your homework or assignments. Solutions Swiflearn > NCERT Solutions > NCERT Solutions for Class 9 > NCERT Solutions for Class 9 Science > NCERT Solution for Class 9 Science Chapter 1: Matter in Our Surroundings [Total: 26 Average: 4.5] NCERT Solution for Class 9 Science Chapter 1 sets the foundation of chemistry. it's very important to have a better understanding of this chapter. Solutions of exercise: Matter in Our Surroundings, have been explained in detail by Swiflearn. These are going to help you understand the basic concepts of the subject. In this chapter, you will surely be able to relate chemistry with real life. This chapter tells how different matters change their states under different temperatures and pressures. Read the answers, understand, and then try to attempt these on your own. NCERT Solutions for Class 9 Science Chapter 1 includes intext exercises 1, 2, 3, 4, and an NCERT exercise. It has a total of 9 questions in the NCERT exercise. Most of the questions are application based and few are memory-based questions. You can practice these questions to test and enhance your application skills and cognizance. NCERT Solution for Class 9 Science Chapter 1: Matter in Our Surroundings Exercise 1.2.3 Question1. Which of the following is matter? Chair, air, love, smell, hate, almonds, thought, cold, cold drink, smell of perfume. Solution: Chair, air, almonds, cold drinks. Question2: Give reason for the following observations: 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: When food is sizzling hot, it releases the vapour of its contents. Since the kinetic energy of the particles is very high in the vapour state. They can reach us even at a distance of several meters. However, when the food is cold, the vapour released will be comparatively less. Moreover, their kinetic energy will be also very small. Under these condition, one has to come quite close in order to smell the contents of the food. Question3. A diver is able to cut through water in a swimming pool. Which property of matter does this observation show? Solution: This shows that in water which represents the liquid state of matter, there are sufficient inter particle spaces. That is why, a diver is able to cut through water. He might not do the same had these spaces been very small (e.g. in solid state). Question4. What are the characteristics of the particles of matter? Solution: 1. Particles of matter are extremely small. 2. Particles of matter have space between them. 3. Particles of matter at continuously moving. 4. Kinetic energy of particles increases with increase of temperature. 5. Particles of matter attract each other. Exercise 1.3.3 Question1. 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, water, chalk, cotton, and iron. Solution: The increasing order of density for the given substances is: Air. Exhaust from chimneys, cotton, water, honey, chalk, iron. Actually the density of a substance depends upon the number of particles per unit volume as well as upon their mass. The number of particle related to their size as well as the attractive amongthem. Keeping his in view, the increasing order of density is as given above. Question2. (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. Solution: (a) Refer pdf. (b) (i) Rigidity : Rigid means unbending or inflexible. Solids are rigid in nature because it Is difficult to change their Shape by applying external force. (ii) Compressibility: Solids have lime compressibility. A liquid cannot be compressed much but a gas can compress easily. (iii) Fluidity: Fluid means tendency to flow. A vessel or container is required to keep it. Liquids and gases both are fluids. (iv) Filling of a gas container: Gases fill the container completely. (v) Shape: Solids have a fixed shape. Liquids and gases do not have a fixed shape. (vi) Kinetic energy: Molecules in solids possess least kinetic energy. Molecules in liquids possess more kinetic energy than in solids. Molecules in gases have very high kinetic energy. (vii) Density: Solids have high density. Liquids have smaller density than solids but greater than gases. Gases have the least density. Question3. Give reasons: a) A gas fills completely the vessel in which it is kept. b) A gas exerts pressure on the walls of the container. c) A wooden table should be called a solid. d) We can easily move our hand in the air but to do the same through a solid block of wood we need a karate expert. Solution: (a) A gas has neither a fixed shape nor a fixed volume. Particles of gas move freely in a random manner and assume the shape and volume of the vessel in which it is tilted. (b) The molecules of gas move freely in a zig-zag manner. They collide with each other and with the walls of the container. The bombardment of gas molecules on the walls of the container exerts a steady force and is responsible for the pressure of the gas. (c) A wooden table has a definite shape as well as volume and distinct boundaries. Hence it is a solid. (d) There is a lot of empty space among the gas molecules. But it is not so in case of solids. Hence we can easily move our hand in air but cannot do so in case of solid block of wood. Question4. Liquids generally have low density as compared to solids. But you must have observed that ice floats on water. Find out why? Solution: Ice (solid state) expected to be heavier than water (liquid state). But it is lighter and floats over water. Actually, ice has a cage like structure which means that vacant spaces are left when H2O molecules are linked in ice. The number of these spaces are comparatively less in water. In other words, we can also say that the structure of ice is more porous than that of water. Therefore, water is dense as compared to ice or ice floats over water. Exercise 1.4.2 Question1. Convert the following temperature to Celsius scale: (a) 300 K (b) 573K. Solution: Temperature of Celsius scale = Temperature Kelvin scale 300 (300 - 273) = 27°C. (b) 573k = (573 - 273) °C =300 ° C. Question2. What is the physical state of water at: (a) 25 C(b) 100 C? Solution: (a) Liquid state (b) Gaseous state. Question3. For any substance, why does the temperature remain constant during the change of state? Solution: During the change of state from solid to liquid of liquid to gas for any substance, the temperature remains constant because the heat supplied for the change is used up for changing the state of matter. For example, convert liquid into vapour state, energy is needed to work against the force of attraction between the molecules. Question4. Suggest a method to liquify atmospheric gases. Solution: Gases can be liquify either by cooling or by compressing. Hence, atmospheric gases can be liquified by decreasing temperature or increasing the pressure or both by cling and compression. Exercise 1.5.2 Question1. Why does a desert cooler cool better on a hot dry day? Solution: The humidity i.e., the amount of air is less on a hot dry day. Smaller the humidity, more is the rate of evaporation. Also higher the temperature, greater is the rate of evaporation. Since the rate of evaporation is more on a hot dry day , a dessert cooler cools better. Question2. How does the water kept in an earthen pot (matka) become cool during summer? Solution: During summer, water kept in an earthen pot (matka) continues kto evaporate through fine holes of it. Since evaporation causes cooling, water kept in matka becomes cool during Summer. Question3. Why does our palm feel cold when we put some acetoneol petrol perfume on it? Solution: When we put some acetone or petrol or perfume on our palm, the particles of these substances absorb energy from the palm and evaporate causing cooling. Hence, our palm feels cold. Question4. Why are we able to sip hot tea or milk faster from a saucer rather than a cup ? Solution The surface area of the liquid hot tea or milk is more in a saucer than in a cup. Therefore cooling will take place more rapidly in a saucer than in a cup. Consequently we are able to sip hot tea or milk faster from a saucer rather than cup Question5. What type of clothes should we wear in summer? Solution: During summer we perspire more. Cotton being a good absorber of water, absorbs the sweat and expose it to the atmosphere for easy evaporation. Cooling takes place as a result of evaporation. Thus, we should wear cotton clothes in summer. Exercise Chapter 1 Question1. Convert the following temperature to the Celsius scale: a) 293 k b) 470 k Solution: We know that: k (Kelvin) = C + 273 or C = K - 273 a) C = 293 - 273 = 20 = C b) C = 470 - 273 =197 = C Question2. Convert the following temperature to the Kelvin scale: a) 25 C b) 373 C Solution: We know that: K (Kelvin) = C + 273 OR C +273 = K a) 25 C = 25 + 273 = 298 K b) 373 C = 373 + 273 = 646 K Question3. Give reason for the following observations: a) (Naphthalene balls disappear with time without leaving any solid. b) We can get the smell of perfume sitting several meters away. Solution: a) Naphthalene balls undergo sublimation i.e., conversion from solid to vapours slowly even at room temperature. Hence, naphthalene balls disappear with time with without leaving behind any solid (residue). b) The particles of vapor's of perfume diffuse through air and reach us sitting at a distance. consequently we can get the smell of perfume sitting several meters away. Question4. Arrange the following substance in increasing order of forces of attraction between the particles water, sugar, and oxygen. Solution: Water is a liquid, sugar is a solid and oxygen is a gas. The increasing order of forces of attraction between particles is: Gas < Liquid < Solid. Hence, increasing order of forces of attraction of particles is : Oxygen < Water < Sugar. Question5. What is the physical state of water at (a) 25 C (b) 0 C (c) 100 OC Solution: (a) The physical state of water at 25 C is liquid. (b) The physical state of water at 0 ° C is solid.[Water at 0 C can exist as solid (ice) and liquid (water)]. (c) The physical state of water at 100 C is gas.[Water at 100 C is gas. [Water at 100 C can also exit as liquid in equilibrium with its Question6. Give two reasons to justify: a) Water at room temperature is a liquid. b) An iron almirah is a solid at a room temperature. Solution: a) Water at room temperature is a liquid because of hydrogen bonding as shown below: Thus the molecules of water are bound to each because of which it is liquid. Also, (i) it has a fixed volume but does not have a definite shape. (ii) it can easily flow from one vessel to another . So it has fluidity. (b) An iron almirah is a solid at room temperature because: (i) It has a fixed volume and definite shape. (ii) It cannot be compressed and it has distinct boundaries. (iii) It cannot flow like water . So it does not posses fluidity. Question7. Why is ice at 273 K more effective in cooling than water at the same temperature? Solution: At 273 K, ice can absorb more amount of heat than water due to Its latent heat of fusion. Hence ice at 273 k can cause more cooling than water at the same temperature. Question8. What produces more severe burns, boiling water or steam? Solution: Steam has more heat energy stored in it than in boiling water at the same temperature due to latent heat of vaporisation. Hence, steam win produce more severe burns than boiling Water Question9. Name A, B, C, D, E and F in the following diagram showing change in its state: Solution: A= Fusion B = Vaporization C = condensation D = Solidification E = Sublimation F = Sublimation .

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