



WATER IN OUR LIFE



Concepts Covered

- Water and its uses, Reasons for the shortage
- Types of water
- Water on the earth, Forms of water, Groundwater
- Water table and depletion of the Water Table
- The water cycle, Drought, Floods
- Methods of Water Conservation

Introduction

- Water is a liquid which forms rain and fills rivers, lakes, ponds and the sea (or oceans).
- Water is in the ground and in the air that we breathe. It is everywhere.
- It is one of the most common and useful substances around us.
- It is essential for life.
- All living things (plants and animals) need water to survive.
- If water is not available to plants and animals, they will ultimately die. Without water, there would be no living things on this earth.
- We (human beings) cannot live without water.
- We have listed here the various activities for which we use water in homes.

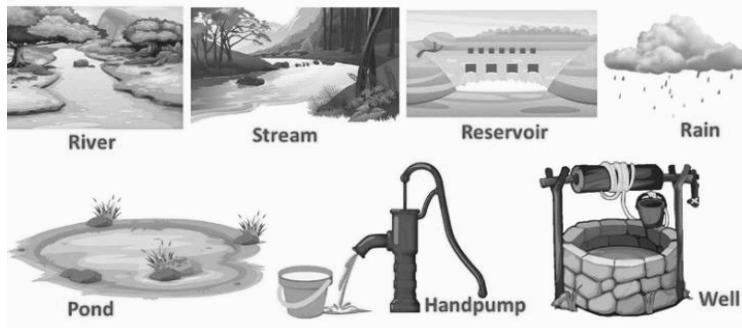


Uses of Water

Some of the most important uses of water in different fields are as follows:

1. Water is used in homes for drinking, cooking food, washing utensils, cleaning the floor, brushing teeth, bathing, washing clothes, flushing toilets and watering plants. These are the domestic uses of water.
2. Water is used in agriculture for growing food.
3. Water is used in industries for producing almost all the things that we use. The making of paper, cloth, medicines, chemicals, bread, biscuits, and many, many other things in industries requires a lot of water.
4. Water is used to keep things cool. For Example, water is used in the radiators of vehicles (like cars, buses, and trucks) to keep their engines cool.
5. Water in the rivers and the seas are used for transporting passengers and goods from one place to another by boats, sailing boats, motor boats and ships.
6. The water of rivers and the sea helps in the dispersal of seeds of several plants and trees.
7. Water is used to generate electricity.

Where Do We Get Water From?



1. The rivers get their water from the melting of snow lying on the peaks of snow mountains (called glaciers) and also from rain.

2. Lakes, ponds, and wells get their water from rain. Thus, the two major sources of water on land are glaciers (snow mountains) and rain.

The place where underground water comes out of the surface of the earth on its own is called a spring. Spring water is also fit for drinking. Please note that the rivers, lakes, ponds, wells, springs, rain and glaciers are called freshwater sources. Their water does not contain many dissolved salts. Thus, the water of rivers, lakes, ponds, wells, springs and rain, etc., is not saline (not salty).



Ocean Water

Forms of Water

- (1) When ice (or snow) is heated, it melts and changes into water.
- (2) When water is cooled too much, it freezes and changes into ice (or snow).
- (3) When water is heated, it evaporates and changes into water vapour.
- (4) When water vapour is cooled, it condenses and changes into liquid water.



SOLID



LIQUID



GAS

Evaporation

"The process of a liquid changing into vapour (or gas) even below its boiling point is called evaporation". Evaporation of a liquid can take place even at room temperature, though it is faster at a higher temperature. It is a surface phenomenon because it occurs at the surface of a liquid only. The water spilt on the floor dries up and disappears due to evaporation.



Formation of Clouds and Rain: Condensation

The mass of tiny droplets formed by the condensation of water vapour which we see floating high in the atmosphere is called a cloud. The formation of clouds involves the process of condensation. The changing of water vapour into the liquid state on cooling is called condensation.

Water Cycle in Nature

Movement of water from and below earth's surface to air and then back to earth's surface is called Water cycle.

Water cycle occurs as the cycle of the following processes:
Evaporation: Water evaporates from earth's surface and water bodies due to the heat of the sun. Water is converted into vapours. This process is called evaporation. Vapours are light and they rise in the air.

Condensation: Condensation is the process by which vapours cool down to liquid.

Precipitation: Many small droplets of water combined to form big drops. These drops are heavy and come down as rain, sleet, snow, or hail. This process is known as precipitation.



Water Cycle in Nature

Drought

Sometimes it so happens that it does not rain in a region for a year or more. This leads to a shortage of water in that region causing dryness everywhere. An environment full of dryness is called drought. So, we can say that if it does not rain in a region for a long time it causes drought (or sookha). Drought is a long period without rain leading to the severe shortage of water in that region.



Floods

Every place in the world experiences rain at some point. The time, duration and amount of rainfall varies from place to place. For example, in some parts of the world, it rains throughout the year whereas in other parts it rains only for a few days in a year. The monsoon season is when our country experiences the majority of its rainfall (rainy season). We always appreciate the rain since it is good for us.

Example:

- (i) Rain brings relief by cooling the environment after hot summer days.
- (ii) Sowing of many crops depends on the arrival of rain during monsoon.
- (iii) It provides water in the rivers and dams of hydroelectric power plants.
- (iv) It fills up the lakes and ponds which act as a source of water.
- (v) It is also responsible for groundwater stored under the surface of the earth.



Rainwater Harvesting

One way of increasing the availability of water to overcome its shortage is rainwater harvesting. The activity of collecting rainwater directly and storing it in big tanks for later use, or making the rainwater percolate into the ground more efficiently to recharge the groundwater, is called rainwater harvesting.

There are two main techniques of rainwater harvesting:

- (a) Collection and storage of rainwater in tanks for future use when there is a scarcity of water.
- (b) To make rainwater percolate into the ground more efficiently by constructing percolation pits and recharge wells so as to recharge (or replenish) groundwater.
 - In rural areas (village areas), most of the ground has open soil due to which rainwater can seep into the ground naturally to make up for the loss of groundwater due to excessive use.
 - In urban areas (city areas), however, most of the ground is covered with buildings, concrete pavements and cemented roads due to which very little rainwater seeps into the ground naturally. Most of the rainfall in the cities flows into dirty water drains and drains away.

So, rainwater harvesting is necessary in city areas. Rainwater harvesting, by making more water percolate into the ground is usually done in those areas of a city where tube-wells (for supplying water) are located.

Rainwater harvesting can be done in two ways:

1. Rooftop rainwater harvesting.
2. Rainwater harvesting from open spaces around buildings.



Solved Examples

Level – 1

- (1) **From where do lakes and ponds get their water?**
Answer: Rain.
- (2) **List one use of water.**
Answer: Water is essential for the germination of seeds.
- (3) **Name the states where rooftop water harvesting is used to collect water.**
Answer: Tamil Nadu and Rajasthan.
- (4) **Which human activity consumes the largest amount of water?**
Answer: Toilet.
- (5) **Why is water used in car radiators?**
Answer: To keep the engine cool.
- (6) **Why is water important for us?**
Answer: 1. Water regulates body temperature by the process of respiration and evaporation.
 2. All metabolic reactions in the body take place in an aqueous medium.
 3. It transports minerals and food materials in plants and animals.
- (7) **What is water cycle?**
Answer: Water constantly moves from the earth to the air and back again. The constant circulation of water is known as the water cycle.
- (8) **How does the water cycle helps in maintaining global climate?**
Answer: Water cycle plays an important role in maintaining global climate. Oceans absorb vast quantities of heat and help in global warming. By absorbing heat, water evaporates and on condensation releases heat. This absorption and release of heat in the form of energy drives weather pattern in the short-term and regulate the climate for a long time.
- (9) **What will happen if we are lost in a sea and drink a lot of sea water to quench our thirst?**
Answer: The sea water is highly saline. Drinking this water will cause diarrhoea and loss of too much water from our body through frequent urination. Thus, will cause dehydration and ultimately death.
- (10) **Define Drought.**
Answer: Drought is a long period without rains leading to a severe shortage of water in the region. The soil continues to lose water by evaporation and transpiration. If, however, it does rain at all or the rainfall is very low for a long period, the loss of water from the soil is not made up and hence the soil becomes dry.

Exercise

FILL IN THE BLANKS

- (1) The water in the oceans is very _____ in taste.
- (2) We use a rain _____ on a rainy day.
- (3) The process of water seepage into the ground is called _____.
- (4) The continuous circulation of water from the earth's surface to the atmosphere, and from the atmosphere back to the earth, is called _____.
- (5) People obtain groundwater through _____ and _____.

TRUE OR FALSE

- (1) Life is possible on earth without water.
- (2) When water is heated, it changes into ice.
- (3) Evaporation of water takes place at all times.
- (4) Saline water is fit for drinking and other domestic, agricultural, and industrial needs.
- (5) About two-third of the earth is covered with water.

OBJECTIVE TYPE QUESTIONS

- (1) Which of the following is the purest form of natural water?
 (A) Well water (B) Spring water
 (C) Rain water (D) River water
- (2) Which of the following is not an effect of acute scarcity of water on plants?
 (A) Shortage of food (B) Shortage of oxygen
 (C) Shortage of carbon dioxide (D) Shortage of rainfall
- (3) Some water in a plate is placed near a window. After some time, the water disappears. This is because water has turned into
 (A) Dew (B) Vapour
 (C) Solution (D) Steam
- (4) What percentage of the earth's surface is covered with water?
 (A) About 51 per cent (B) About 21 per cent
 (C) About 71 per cent (D) About 81 per cent
- (5) Which of the following are due to condensation?
 1. Water drops appear on the outer surface of a glass containing ice-cold water.
 2. Steam arising from wet clothes while they are ironed.
 3. The blackboard dries up after wiping with a wet cloth.
 4. Fog appearing on a cold winter morning.
 (A) 1 and 2 (B) 2 and 3
 (C) 1 and 4 (D) 3 and 4
- (6) When rainwater is made to percolate into the ground more efficiently by constructing percolation pits, it is called
 (A) Groundwater Replenishing (B) Rainwater Recharging
 (C) Rainwater Harvesting (D) Rainwater Collecting
- (7) Identify the source of ground water.
 (A) Sub-soil water (B) River water
 (C) Rainwater (D) All of the above
- (8) Clouds are formed due to
 (A) Only evaporation (B) Only condensation
 (C) Both evaporation and condensation (D) Only vaporization
- (9) Which of the following is the primary source of water on land?
 (A) Lakes (B) Tanks
 (C) Ponds (D) Rain water
- (10) What causes the formation of salt from sea water?
 (A) Evaporation (B) Condensation
 (C) Transpiration (D) Transformation

Answer Key

FILL IN THE BLANKS

- (1) salty
- (2) coat
- (3) infiltration
- (4) water cycle
- (5) Hand-pumps, tube-wells

TRUE OR FALSE

- (1) False
- (2) False
- (3) True
- (4) False
- (5) True

OBJECTIVE TYPE QUESTIONS

- | | |
|-------|--------|
| (1) C | (6) C |
| (2) C | (7) C |
| (3) B | (8) C |
| (4) C | (9) D |
| (5) C | (10) A |