
NCERT Exemplar Solutions for Class 6 Science**Chapter 14: Water**

Multiple Choice Questions**1. Which of the following activity does not involve use of water?**

- (a) Washing clothes
- (b) Bathing
- (c) Cleaning utensils
- (d) Drying wet clothes

Solution: (d) Drying wet clothes

Explanation: During the process of drying wet clothes, water gets converted into vapor form through evaporation. This process involves the removal of water rather than the use of water. In contrast, washing clothes, bathing, and cleaning utensils are activities that require the direct use of water.

2. In which of the following activities will you use minimum amount of water?

- (a) Bathing
- (b) Brushing teeth
- (c) Washing clothes
- (d) Mopping a room

Solution: (b) Brushing teeth

Explanation: Among the given options, brushing teeth requires the least amount of water - typically just a few glasses. Bathing requires several buckets, washing clothes needs multiple buckets depending on the quantity, and mopping a room also requires a significant amount of water.

3. The quantity of water required to produce one page of your book is

- (a) one bucket
- (b) ten buckets
- (c) two glasses
- (d) few drops

Solution: (c) two glasses

Explanation: The paper manufacturing process is water-intensive. To produce one sheet of paper, approximately two glasses of water are required during various stages including pulp preparation, cleaning, and processing.

4. Water in our tap comes from a

- (a) river
- (b) lake
- (c) well
- (d) river, lake or well

Solution: (d) river, lake or well

Explanation: Municipal water supply systems draw water from various sources including rivers, lakes, and wells. This water is then processed through water treatment plants to make it safe for consumption before being distributed through the tap water system.

5. In which of the following case evaporation of water will be slowest?

- (a) A tray of water kept in sunlight
- (b) A kettle of water kept on a burner
- (c) A glass of water kept in a room
- (d) A bucket of water kept on rooftop

Solution: (c) A glass of water kept in a room

Explanation: Evaporation rate is directly proportional to temperature. The higher the temperature, the faster the evaporation. Among the given options, a glass of water kept in a room will have the lowest temperature environment compared to sunlight, a heated burner, or a rooftop exposed to sun, resulting in the slowest evaporation rate.

6. Transpiration is a process in which plants

- (a) receive water from soil
- (b) absorb water vapour from air
- (c) prepare food from water
- (d) release water vapour

Solution: (d) release water vapour

Explanation: Transpiration is the process by which plants lose water in the form of water vapor through their leaves and other aerial parts. This process helps in cooling the plant and facilitating the transport of nutrients from roots to leaves. The water loss through transpiration is significant in plants.

7. Clouds are

- (a) tiny drops of water floating in air
- (b) mixture of dust and water vapour
- (c) particles of water vapour
- (d) rain drops in air

Solution: (a) tiny drops of water floating in air

Explanation: Clouds are formed when water vapor in the atmosphere condenses into tiny water droplets that float in the air. These microscopic water droplets cluster together to form visible clouds. When these droplets combine and become heavy enough, they fall as precipitation (rain, snow, etc.).

8. Wells are fed by

- (a) pond water
- (b) lake water
- (c) rain water
- (d) groundwater

Solution: (d) groundwater

Explanation: Wells access groundwater, which is water that has infiltrated into the soil and collected in underground aquifers. This groundwater originates from rainwater that seeps through the soil layers. Lakes, ponds, and rivers are surface water bodies, while wells specifically tap into the underground water reserves.

9. Floods cause extensive damage to

- (a) crops
- (b) property and human life
- (c) domestic animals
- (d) all of the above

Solution: (d) all of the above

Explanation: Floods are natural disasters that cause widespread destruction. When water levels rise excessively due to heavy rainfall, rivers overflow and inundate large areas. This results in damage to agricultural crops, destruction of property, loss of human lives, and harm to domestic and wild animals. The impact of floods is comprehensive and affects all aspects of life in the affected region.

10. "Catch water where it falls" is the basic idea behind

- (a) recycling of water
- (b) making dams to store water
- (c) rainwater harvesting
- (d) condensation of water vapour

Solution: (c) rainwater harvesting

Explanation: "Catch water where it falls" is the fundamental principle of rainwater harvesting. This method involves collecting and storing rainwater at the point where it falls, rather than allowing it to run off. This collected water can be used later for various purposes or can be directed to recharge groundwater.

Very Short Answer Questions

11. Look at the figure and write down activities shown in which water is being used.



Solution: The activities shown in the figure where water is being used are: (i) Water is used for bathing (ii) Water is used for washing clothes (iii) Water is lifted from the well for storage and drinking purposes

12. Write any two activities which require more than a bucket of water.

Solution: Two activities that require more than a bucket of water are: (i) Irrigation of crops - requires large quantities of water for proper plant growth (ii) Washing a large number of clothes - needs multiple buckets depending on the quantity of clothes

13. Write any two activities which require less than one bucket of water.

Solution: Two activities that require less than one bucket of water are: (i) Brushing teeth - requires only a few glasses of water (ii) Washing hands - needs minimal water for proper cleaning

Short Answer Questions

14. Why do wet clothes placed on a clothes line get dry after some time? Explain.

Solution: Wet clothes placed on a clothesline get dry due to the process of evaporation. When wet clothes are exposed to air and sunlight, the water present in the fabric gets converted into water vapor due to evaporation. The heat from the sun and air circulation accelerate this process, causing the water to gradually evaporate from the clothes, leaving them dry.

The rate of drying depends on factors such as:

- Temperature (higher temperature increases evaporation)
- Humidity (lower humidity speeds up drying)
- Air circulation (wind helps in faster evaporation)
- Surface area of clothes exposed to air

15. Water kept in sunlight gets heat from sun and is evaporated. But how does water kept under the shade of a tree also get evaporated? Explain.

Solution: Water kept under the shade of a tree also evaporates because evaporation is not solely dependent on direct sunlight. Even in shaded areas, evaporation occurs due to the following reasons:

1. **Ambient Temperature:** The air around the tree gets heated during the day due to the overall environmental temperature, even though it's not in direct sunlight.
2. **Air Movement:** Air circulation under the tree helps in the evaporation process by carrying away the water vapor.
3. **Heat Transfer:** The surrounding environment transfers heat to the shaded area, providing enough energy for water molecules to evaporate.
4. **Natural Process:** Evaporation is a continuous natural process that occurs at all temperatures above freezing point, though at different rates.

16. How do the areas covered with concrete affect the availability of groundwater?

Solution: Areas covered with concrete significantly reduce the availability of groundwater in the following ways:

1. **Reduced Infiltration:** Concrete surfaces are impermeable, preventing rainwater from seeping into the ground and recharging groundwater reserves.
2. **Increased Surface Runoff:** Instead of being absorbed, rainwater flows over concrete surfaces and is lost through drainage systems, reducing the amount available for groundwater recharge.
3. **Urban Heat Effect:** Concrete surfaces increase local temperatures, leading to higher evaporation rates and less water available for ground infiltration.
4. **Long-term Impact:** Continuous concrete coverage over large areas leads to a gradual decline in groundwater levels, making wells and bore wells less effective.

17. Why is there a need for conserving water? Give two reasons.

Solution: There is an urgent need for water conservation due to the following reasons:

Reason 1: Increasing Population and Demand With the rapid increase in population, the demand for water is growing exponentially. More people require water for drinking, cooking, bathing, and other daily activities. However, the available freshwater resources remain limited, creating a gap between supply and demand.

Reason 2: Declining Groundwater Levels Due to climate change, excessive extraction, and reduced rainfall in many regions, groundwater levels are declining drastically. This depletion threatens the sustainability of water supply for future generations and can lead to severe water scarcity, affecting agriculture, industry, and domestic use. Additional concerns include pollution of existing water sources and the high cost of water treatment and distribution.

18. Fill in the blanks selecting words from the following list:

Snow, rain, clouds, vapour, evaporation, transpiration

Water, as _____ goes into atmosphere by the processes of _____ and _____ and forms _____, which on condensation fall in the form of _____ and _____.

Solution: Water, as **vapour** goes into atmosphere by the processes of **evaporation** and **transpiration** and forms **clouds**, which on condensation fall in the form of **rain** and **snow**.

Explanation: This sentence describes the water cycle. Water evaporates from surface water bodies and transpires from plants, forming water vapor that rises into the atmosphere. This vapor condenses to form clouds, which eventually release precipitation as rain or snow.

Long Answer Questions

19. Most of the water that falls on the land as rain and snow, sooner or later goes back to a sea or an ocean. Explain how it happens?

Solution: The return of water from land to seas and oceans is a continuous process that occurs through various pathways:

1. Surface Runoff:

- When rain falls on land, much of it flows over the surface as streams and rivers
- This surface water eventually drains into rivers, which flow downhill toward seas and oceans
- Snow that melts during warmer seasons also contributes to this surface flow

2. Groundwater Flow:

- Some rainwater infiltrates into the soil and becomes groundwater
- This groundwater slowly moves underground and eventually seeps into rivers, lakes, or directly into coastal areas
- Even when groundwater is extracted for human use (domestic, agricultural, industrial), the wastewater ultimately returns to rivers and flows to the sea

3. Evaporation and Precipitation Cycle:

- Water from land surfaces evaporates and forms clouds
- These clouds may precipitate over oceans, directly returning water to the sea
- This creates a continuous cycle of water movement

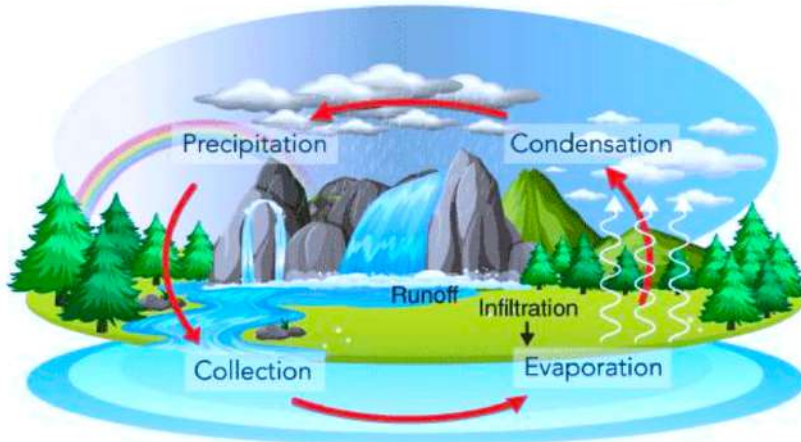
4. Human Activities:

- Water used for irrigation eventually evaporates or drains into water bodies
- Sewage treatment plants discharge treated water into rivers

- Industrial water use also returns to the water cycle

This process is fundamental to the global water cycle and ensures the continuous circulation of water between land and sea.

20. Draw a diagram to show how sea water reaches a lake or pond.



Solution: The process of seawater reaching a lake or pond occurs through the water cycle:

Process Description:

1. **Evaporation:** Solar energy causes water from seas and oceans to evaporate, forming water vapor
2. **Condensation:** The water vapor rises, cools, and condenses to form clouds
3. **Precipitation:** Clouds release water as rain or snow over land areas
4. **Collection:** This precipitation collects in lakes, ponds, and other water bodies
5. **Runoff and Infiltration:** Some water flows as surface runoff while some infiltrates into the ground

Key Points:

- The sun provides energy for evaporation
- Wind helps transport water vapor inland
- Temperature changes cause condensation
- Gravity drives precipitation and runoff
- This creates a continuous cycle connecting all water bodies

21. Dissolve two spoons of common salt in half a cup of water. Now if you want to get the salt back, what will you do?

Solution: To recover salt from saltwater, we can use the process of evaporation. Here are two effective methods:

Method 1: Heat Evaporation

1. Pour the salt solution into a shallow pan or container
2. Heat the solution on a stove at medium temperature
3. As the water heats up, it will evaporate and convert to water vapor
4. Continue heating until all the water has evaporated
5. Pure salt crystals will remain in the container

Method 2: Natural Evaporation

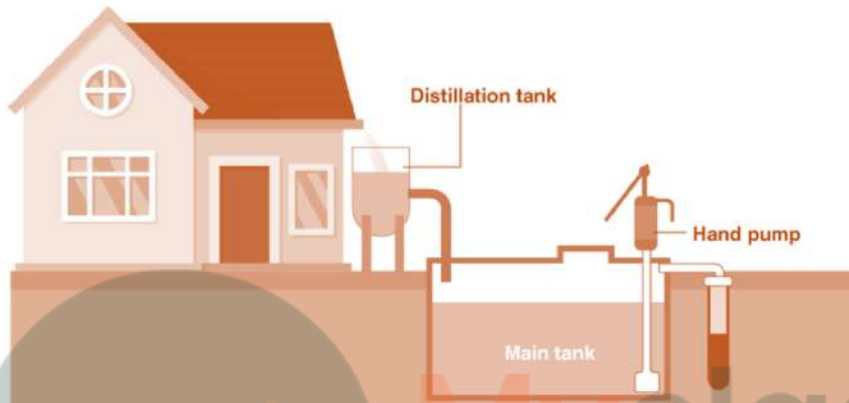
1. Pour the salt solution into a shallow plate or tray

2. Place the container in direct sunlight or a warm, well-ventilated area
3. Allow the water to evaporate naturally over several hours or days
4. The salt will crystallize as the water evaporates

Scientific Explanation: Evaporation is a physical process where water changes from liquid to vapor state, leaving behind the dissolved salt. Salt has a much higher boiling point than water, so it remains in solid form while water evaporates. This method is used commercially in salt production from seawater.

Safety Note: When using the heating method, adult supervision is required to prevent accidents.

22. Explain the process of rooftop rainwater harvesting with the help of a suitable diagram.



Solution:

Rooftop Rainwater Harvesting Process:

Rooftop rainwater harvesting is an efficient method of collecting and storing rainwater for future use. The process involves the following components and steps:

Components:

1. **Catchment Area:** The roof surface that collects rainwater
2. **Gutters:** Channels that collect water from the roof edges
3. **Downpipes:** Vertical pipes that carry water from gutters
4. **First Flush Diverter:** Device that diverts the initial dirty water
5. **Storage Tank:** Container for storing collected clean water
6. **Filter System:** Removes debris and impurities
7. **Distribution System:** Pipes and pumps for water usage

Process:

1. **Collection:** Rainwater falls on the roof and flows into gutters
2. **Transportation:** Water travels through downpipes to the storage system
3. **Filtration:** The water passes through filters to remove leaves, dust, and debris
4. **Storage:** Clean water is stored in tanks for later use
5. **Distribution:** Stored water can be used for various purposes like gardening, cleaning, or groundwater recharge

Benefits:

- Reduces dependency on municipal water supply
- Helps recharge groundwater
- Reduces water bills

- Provides water during dry periods
- Reduces flood risk by managing runoff

Alternative Method: Instead of storing in tanks, the collected water can be directed to recharge pits that allow it to seep into the ground, replenishing groundwater aquifers.

Important Note: The collected water should be filtered and may need treatment before drinking, depending on the roof material and local air quality.

This completes the comprehensive solution set for NCERT Exemplar Chapter 14: Water for Class 6 Science.

