



Chapter-8

Jourey through states of water

Answer Key

Q.1 Write the summary of the chapter in the flow chart below, using the hints give below:

1. **Evaporation:** Heat from the sun causes water to turn into vapour.
2. **Transpiration:** Plants release water vapour into the air.
3. **Condensation:** Water vapour cools down and forms clouds.
4. **Precipitation:** Water falls back to Earth as rain, snow, or hail.
5. **Collection:** Water flows into oceans, rivers, and recharges the water table

Q2. Multiple Choice Questions

1. b) Solid, liquid, gas
2. c) Evaporation
3. b) 0°C (32°F)
4. b) Steam
5. c) Increasing airflow

Q3. Fill in the Blanks

1. Water vapor gets added to air by evaporation.
2. The movement of water between ocean and land is called the water cycle.
3. Water covers more than two-thirds of Earth's surface.
4. In the air, water is present mostly as clouds and vapour.
5. Water in oceans and seas is for drinking.

Q4. True or False

1. Water dries up faster on hot days than cloudy days. True
2. More than two-thirds of Earth is covered with water, not just one-third. True
3. Heat is needed to turn water into vapor. True

Q5. Assertion and Reason Questions

Assertion (A): Oceans help in giving us usable water.

Reason (R): By the time seawater reaches us in other sources, it's no longer salty.

Answer: (a) Both A and R are true and R explains A.

Explanation: Oceans provide water that becomes usable through processes like evaporation, which leaves salts behind. The water cycle, driven by evaporation and condensation, circulates water, replenishing fresh water sources.

Assertion (A): Sea water is salty.

Reason (R): Sea water has many salts mixed in it.

Answer: (a) Both A and R are true and R explains A.

Explanation: Sea water is salty because it has many salts mixed in it.

Assertion (A): Sea water becomes vapor through transpiration with sunlight. Reason (R): When sea water turns to vapor, salts stay behind.

Answer: (d) A is false but R is true.

Explanation: Sea water turns into vapor through evaporation (not transpiration) due to heat, and when it turns to vapor, salts stay behind.

Q6. Match the Column

Column A	Column B
High temperature	Speeds up evaporation
Wide surface area	More molecules escape into air
Strong wind	Carries away water vapour
Low humidity	Air absorbs more water vapour
Still air	Slows down evaporation

Column A	Column B
Cold water bottle	Water droplets on outer surface
Morning grass	Dew due to condensation
Cloud formation	Vapour cooling into tiny droplets
Foggy mirror	Vapour turns to liquid on glass
Cold leaf surface	Condensation of vapour from plants

Column A	Column B
Sweating	Evaporation cools the body
Earthen pot (matka)	Keeps water cool through evaporation
Atmospheric Water Generator	Extracts drinking water from air
Drying clothes	Example of evaporation
Steam from dosa pan	Vapour formed by heat

Q7. Very Short Answer Questions

1. Name the three states of water.

Solid, Liquid, Gas

2. What is the process of water changing from a liquid to a gas called?

Evaporation

3. **Give an example of water in its solid state. what is its melting point?**

Ice

4. **What is the temperature at which water boils and turns into vapour?**

100°C (at normal atmospheric pressure)

5. **Define condensation.**

Condensation is the process by which water vapour (gas) cools down and changes back into liquid form.

Q8. Short Answer Questions

1. **Explain the difference between evaporation and condensation.**

Evaporation is the process where liquid water changes into water vapour (gas) due to heat. Condensation is the process where water vapour cools down and changes back into liquid water.

2. **Describe what happens to water molecules as water changes from a liquid to a solid.**

The molecules lose energy, move more slowly, and arrange themselves into fixed positions, forming a rigid structure (ice).

3. **How does humidity affect the rate of evaporation?**

High humidity slows down evaporation because the air already contains a lot of water vapour. Low humidity speeds up evaporation because the air can absorb more water vapour.

4. **Give two examples of the importance of the water cycle.**

It provides fresh water for plants, animals, and humans.
It helps regulate Earth's climate and weather patterns.

5. **Why do we see drops of water on a glass containing ice?**

Evaporation, Condensation, Precipitation, and Collection (or Runoff/Infiltration).

Q9. Long Answer Questions

1. Describe the three states of water, including their properties and examples of where they are found in nature.

Water can exist in three distinct states:

Solid (Ice):

- Molecular Arrangement: Tightly packed in a regular pattern.
- Shape: Fixed.
- Volume: Fixed.
- Density: Less dense than liquid water, which is why it floats.
- Temperature: At or below 0°C (32°F).

Liquid (Water):

- Molecular Arrangement: More loosely packed and irregular than in ice, allowing free movement.
- Shape: No fixed shape, takes the shape of its container.
- Volume: Fixed.
- Density: Higher than ice.
- Temperature: Between 0°C (32°F) and 100°C (212°F).

Gas (Water Vapour):

- a) Molecular Arrangement: Widely spread out with rapid movement.
- b) Shape: No fixed shape, can fill any container completely.
- c) Volume: Variable.
- d) Density: Least dense.
- e) Temperature: At or above 100°C (212°F).

2. Explain the water cycle in detail, including the processes involved and why it is important for life on Earth.

The water cycle is the continuous movement of water on, above, and below the Earth's surface. It is crucial for maintaining a constant total water supply on Earth and is essential for all life forms. The main processes involved are:

- a) Evaporation: Water from oceans, rivers, and lakes turns into vapor and rises into the atmosphere due to heat.
- b) Condensation: The water vapor cools as it rises, forming tiny droplets that create clouds.
- c) Precipitation: Water falls back to Earth from clouds as rain, snow, sleet, or hail.
- d) Collection: This precipitated water collects in bodies of water like oceans, rivers, lakes, and also recharges groundwater, and the cycle then repeats.

Q10. Case-Based Question

The predicted order of evaporation from fastest to slowest is:

1. Container C (under a fan): Increased airflow from the fan will rapidly remove water vapor from the surface, significantly speeding up evaporation.
2. Container A (direct sunlight): High temperature from direct sunlight provides more energy to water molecules, making them vaporize faster.
3. Container B (in the shade): Compared to direct sunlight, the temperature will be lower, which decreases the rate of evaporation. However, it will still evaporate faster than a highly humid environment.
4. Container D (high humidity): Higher humidity means the air is already saturated with water vapor, significantly reducing the air's ability to absorb more moisture and thus slowing down evaporation.

Q.11 Labelled States:

- Solid \rightarrow Ice
- Liquid \rightarrow Water
- Gas \rightarrow Water Vapour

Transitions:

- Melting: Solid \rightarrow Liquid
- Evaporation: Liquid \rightarrow Gas
- Condensation: Gas \rightarrow Liquid

1. What happens to water when it is cooled below 0°C ?

It freezes and changes from liquid to solid, forming ice.

Q.12 Evaporation in Action

Factors Affecting Evaporation:

- Surface Area
- Temperature
- Airflow

1. Why do clothes dry faster on a windy day?

Wind increases airflow, which speeds up evaporation by carrying away water vapour quickly.

Q.13 Condensation Mystery

Explanation:

Water vapour in the air touches the cold surface of the glass, cools down, and changes into liquid droplets.

1. Where do the water droplets on the outside of the glass come from?

They come from water vapour in the air, not from inside the glass.

Q.14 The Water Cycle

Missing Labels:

- Evaporation
- Condensation
- Precipitation
- Collection

1. What role does the Sun play in the water cycle?

The Sun provides heat energy that drives evaporation, starting the cycle.

Q.15 Investigating Change of State

Process	Diagram Description	State Change	Real-Life Example
Melting	Ice cube turning into water	Solid → Liquid	Ice melting in a glass
Freezing	Water kept in freezer becomes ice	Liquid → Solid	Making ice cubes in a freezer
Evaporation	Water on a hot pan disappears	Liquid → Gas	Wet clothes drying in the sun
Condensation	Steam turns into droplets on a lid	Gas → Liquid	Fog forming on a bathroom mirror

Q16 Cooling Effect

Explanation:

Evaporation of water from wet sand absorbs heat, cooling the inner pot. This keeps the contents cooler than the surrounding air.

1. Why does water in an earthen pot feel cooler than in a steel container?

Because evaporation from the porous surface of the earthen pot removes heat, lowering the temperature of the water inside.

Q17. Factors of Evaporation:

1. **Temperature:** Raising the temperature gives molecules more energy to vaporize.
2. **Surface Area:** Expanding the surface area allows more water molecules to escape into the air.
3. **Air Flow:** Strong winds or airflow help move vapour away, speeding up the process.
4. **Humidity:** Humidity is the amount of water vapour present in air. If air already has a lot of moisture, it cannot take more vapour easily, so evaporation slows down.

Q18. Rainfall Effects:

1. **Insufficient Rainfall:** Leads to dry soil, lowering water levels in rivers, and results in drought.
2. **Excessive Rainfall:** Raises water levels in rivers and lakes, causing floods.

Q19. Reflection Answer:

Clean water is essential for life, but most water on Earth is salty ocean water. As the population grows, clean water becomes scarce, so we must protect and conserve it.