The Water Cycle

Use this key to check answers and read the explanations.

1. A thin puddle on a playground shrinks during a sunny afternoon. Which process moves some of its water into the air?
   - A. Evaporation
   - B. Condensation
   - C. Precipitation
   - D. Freezing

   Correct answer: A. Evaporation
   Evaporation happens when liquid water becomes water vapor. Sunlight can supply energy for the change.

2. Which word covers rain, snow, and other forms of water that fall from clouds?
   - A. Transpiration
   - B. Infiltration
   - C. Precipitation
   - D. Evaporation

   Correct answer: C. Precipitation
   Precipitation includes liquid and frozen water that falls from the atmosphere to Earth’s surface.

3. As moist air cools, some water vapor changes into tiny liquid droplets. What is this change called?
   - A. Evaporation
   - B. Condensation
   - C. Melting
   - D. Runoff

   Correct answer: B. Condensation
   Condensation changes water from a gas to a liquid. Tiny droplets can form a cloud when they collect in the air.

4. On a warm day a snowbank gives off a trickle of liquid water. Which change produces that liquid?
   - A. Freezing
   - B. Condensation
   - C. Sublimation
   - D. Melting

   Correct answer: D. Melting
   Melting changes frozen water to liquid water. Meltwater can run over the ground or soak in.

5. Rainwater runs along a sidewalk and downhill into a stream. What is the flow along the sidewalk called?

A. Infiltration
B. Surface runoff
C. Groundwater flow
D. Transpiration

Correct answer: B. Surface runoff
Runoff is water moving over the land surface. A sidewalk gives water little opportunity to soak in.

6. Part of a rainstorm soaks into the soil of a garden. Which process occurs as the water crosses the ground surface?

A. Infiltration
B. Condensation
C. Surface runoff
D. Precipitation

Correct answer: A. Infiltration
Infiltration is the entry of water into the ground. Some infiltrated water can travel deeper to reach groundwater.

7. After water enters a tree through its roots, some leaves the tree as vapor through its leaves. What is that process?

A. Condensation
B. Groundwater recharge
C. Surface runoff
D. Transpiration

Correct answer: D. Transpiration
Transpiration transfers water from plants to the atmosphere, mainly through tiny openings in leaves.

8. On a dry, cold day, snow on a sheltered ledge changes directly to water vapor without melting. Which process is described?

A. Condensation
B. Evaporation
C. Sublimation
D. Infiltration

Correct answer: C. Sublimation
Sublimation takes water directly from its solid form to vapor. Evaporation starts with liquid water.

9. Water flows naturally out of a hillside even between rainstorms. In the water cycle, what does this spring illustrate?

A. Groundwater discharging to the surface
B. Water vapor turning into cloud droplets
C. Rain splashing against a hillside
D. Water lost from leaves into the air

Correct answer: A. Groundwater discharging to the surface
A spring occurs where groundwater reaches the land surface and flows out naturally.

10. A meadow sends water to the atmosphere both from wet soil and through plant leaves. What do hydrologists call those two transfers taken together?

A. Snowmelt
B. Precipitation
C. Groundwater recharge
D. Evapotranspiration

Correct answer: D. Evapotranspiration
Evapotranspiration combines evaporation from surfaces and transpiration from plants.

11. Two small plots get the same rain. One is grass over permeable soil, and one is covered by intact pavement. Which outcome is more likely on the paved plot?

A. More infiltration and more transpiration
B. More infiltration and less surface runoff
C. Less infiltration and more surface runoff
D. More snowmelt and less surface runoff

Correct answer: C. Less infiltration and more surface runoff
Intact pavement limits entry into the soil. More of the water can flow across the surface.

12. Some rainwater soaks in, moves downward through soil, and reaches the saturated zone. What does reaching that zone do?

A. Turns groundwater into vapor
B. Recharges groundwater
C. Creates precipitation
D. Stops all groundwater flow

Correct answer: B. Recharges groundwater
Recharge adds water to groundwater. The water must travel below the surface and reach the saturated zone.

13. A mountain basin gets most of its winter precipitation as snow. Why can that precipitation increase river flow several months later?

A. Snow instantly adds the same amount to the river
B. Winter snow travels upstream before melting
C. The river can only receive water by evaporation
D. Snow stores water until the spring melt

Correct answer: D. Snow stores water until the spring melt
Snowpack stores water during colder months. Spring snowmelt releases some of that stored water into rivers.

14. Starting with liquid water in a lake, which sequence could move the same water into groundwater farther away?

A. Evaporation, condensation, precipitation, infiltration, then recharge
B. Infiltration, precipitation, freezing, then evaporation
C. Condensation, precipitation, transpiration, then runoff into the air
D. Freezing, sublimation, runoff in the sky, then recharge

Correct answer: A. Evaporation, condensation, precipitation, infiltration, then recharge
Lake water can evaporate, later form droplets in a cloud, fall to land, enter soil, and move down to recharge groundwater.

15. In a simplified pond budget for one day, 100 liters enter as rain, 35 leave by evaporation, and 50 leave in an outlet. No other flows occur. How does stored water change?

A. It increases by 185 liters
B. It decreases by 15 liters
C. It increases by 15 liters
D. It stays the same

Correct answer: C. It increases by 15 liters
The change in storage is input minus outputs. Here that is $100 - 35 - 50 = 15$ liters added to the pond.