

1.7 The Hydrologic (Water) Cycle

Name: _____ Class: _____ Date: _____

Total: 9 marks

Objective

Build the skills to answer exam questions on the **hydrologic (water) cycle**.

You must be able to:

- name the processes (**evaporation** 蒸发, **transpiration** 蒸腾, condensation, **precipitation** 降水, runoff, infiltration)
- describe how water moves between reservoirs
- explain how humans alter the cycle

1 Worked examples

Study these first. Each one shows the method for a question type used later —follow the steps and you can do the Practice and Exam-style questions yourself.

■ The processes

The **water cycle** moves water by:

- **Evaporation** —liquid water becomes vapor.
- **Transpiration** —water evaporates from plant leaves.
- **Condensation** —vapor forms clouds.
- **Precipitation** —rain/snow falls.
- **Runoff** —water flows over land to rivers/oceans.
- **Infiltration** —water soaks into the ground (groundwater).

■ Reservoirs

Water is stored in oceans (most), ice caps, groundwater, lakes/rivers, and the atmosphere.

■ Human disturbance

Paving land increases runoff and reduces infiltration; **deforestation** reduces transpiration; **withdrawing groundwater** faster than it recharges depletes aquifers.

■ A worked link

Cutting a forest reduces transpiration and infiltration, so more water runs off quickly, raising flood risk and lowering groundwater recharge.

2 Practice

Now apply the methods above.

2.1 What is transpiration? [1]

2.2 What process soaks water into the ground? [1]

2.3 Name the largest reservoir of water. [1]

3 Exam-style questions

3.1 Water evaporating from plant leaves is called [1]

- **A** precipitation
 - **B** infiltration
 - **C** transpiration
 - **D** runoff
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3.2 A city paves over a large grassy area.

(a) Explain the effect on runoff and infiltration. [2]

(b) State one consequence of increased runoff. [1]

3.3 Explain how deforestation changes the local water cycle. [2]

4 Go further

You are now ready for the real exam questions on this subtopic:

- work through the **1.7 The Hydrologic (Water) Cycle** lesson on the **Learn** page;
- read the **The Hydrologic (Water) Cycle** section of the AP Environmental Science handout on the **Know** page.

Solutions

2.1 Evaporation of water from plant leaves.

2.2 Infiltration.

2.3 The oceans.

3.1 C —transpiration.

3.2 (a) Paving increases runoff (water flows over the hard surface) and reduces infiltration (less soaks in). (b) Any one: flooding, less groundwater recharge, more erosion/pollution carried to rivers.

3.3 Fewer trees means less transpiration and less infiltration (roots no longer hold water), so more water runs off quickly and groundwater recharge falls.