

Water Works

Read how water's properties affect everyday events and natural systems.

6.6.b "water has specific properties;"

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline statements that describe a property of water, then circle the effect or example that goes with each underlined statement.

Water at Work

- ① After a rainstorm, a puddle on the school sidewalk changes slowly. Water molecules attract one another. This attraction, called cohesion, helps droplets hold together and creates surface tension at the top of the puddle. A water strider can press on that surface without sinking because its weight is spread across long legs. If the surface is disturbed too strongly, the insect can break through. Cohesion also helps water form rounded drops on a waxy leaf.
- ② In the school garden, water carries dissolved materials to plant roots. A water molecule has slightly positive and slightly negative areas, so it can pull apart many ionic compounds and other polar substances. When fertilizer dissolves, its particles spread through the water instead of remaining as a visible pile. Water does not dissolve every material. Oil is nonpolar, so it forms a separate layer on water. This solvent property makes water useful in living things, soils, and many cleaning jobs.
- ③ Water also behaves unusually when it freezes. Most substances become denser as they turn solid, but water expands when it freezes. Ice is less dense than liquid water, so it floats. A floating ice layer can slow heat loss from a pond below, helping aquatic organisms survive cold weather. Liquid water also changes temperature more slowly than many materials because it can absorb or release much heat. Large lakes can therefore make nearby land warmer in winter and cooler in summer.

2 ANSWER WITH EVIDENCE Use the passage

1 What property helps a water strider stay on top of a puddle, and how does that property help?

2 Why can water carry dissolved fertilizer to plant roots?

3 Why does oil form a separate layer when it is added to water?

4 How does floating ice help organisms in a pond during cold weather?

3 YOUR TURN Your own words

Choose a new everyday situation in which water's solvent property is useful, other than any situation in the passage. Write three sentences that name the property, describe what happens, and explain how the property causes the result.

PART 1 • READ AND MARK

Underline statements that describe a property of water, then circle the effect or example that goes with each underlined statement. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	What property helps a water strider stay on top of a puddle, and how does that property help?	Cohesion creates surface tension at the puddle's surface. The strider's weight is spread across its long legs, so it does not break through the surface.
2	Why can water carry dissolved fertilizer to plant roots?	Water has slightly positive and negative areas that can pull apart many ionic compounds and other polar substances. The fertilizer particles then spread through the water.
3	Why does oil form a separate layer when it is added to water?	Oil is nonpolar, and water does not dissolve every material. Therefore, oil stays separate from the water.
4	How does floating ice help organisms in a pond during cold weather?	Ice is less dense than liquid water, so it floats. The floating layer slows heat loss from the water below, helping aquatic organisms survive.

PART 3 • YOUR TURN (SAMPLE ANSWER)

A cook stirs sugar into water to make lemonade. Water acts as a solvent, pulling apart and surrounding the sugar particles. The dissolved sugar spreads through the drink instead of staying in a pile.

Accept accurate examples that use water as a solvent and include a clear cause-and-effect explanation. Students may choose a different soluble material or practical use, as long as the explanation is scientifically sound.