STEM Sims™

Water Cycle

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Do you need an idea for a scientific study?
Try out one of our ideas or make one of your own.

Start learning right now about the wonders of the water cycle. Take the following brief quiz to see how much you already know about how water moves through the environment. See the bottom of page 4 to check your answers.

1. About how long ago was the first recorded mention of the importance of the water cycle to life on Earth?
   a. 20 years ago
   b. 200 years ago
   c. 2,000 years ago
   d. 2,000,000 years ago

2. What is the energy source that drives most of the movement of water in the water cycle?
   a. volcanoes
   b. the Sun
   c. the inner core of Earth
   d. the Moon

3. About how long does a typical water molecule stay in the polar ice cap reservoir?
   a. 1 year
   b. 10 years
   c. 100 years
   d. 10,000 years

4. A human can live about 40 days without food. About how long can a human live without water?
   a. 3 days
   b. 7 days
   c. 20 days
   d. 40 days

5. About how many gallons of water does it take to make a typical loaf of bread?
   a. 6 gallons
   b. 60 gallons
   c. 600 gallons
   d. 6,000 gallons

Snow Fooling

In many places, snow is a rare event. Even in locations where it does snow, the snow only occurs during a limited time of the year. In this experiment, you'll make fake snow that you can have any day of the year..

Materials

2-clear 300-mL plastic cups
1-teaspoon Instant Snow*
Thermometer
30 -mL Room Temperature Water
Safety Glasses

Directions

1. Make sure to get proper permission before you do this experiment. It can get messy.
2. Put on your safety glasses.
3. Place one teaspoon of Instant Snow in one clear plastic cup.
4. Place about 30-mL of room temperature water in a separate plastic cup.
5. Use the thermometer to measure the temperature of the water in the cup. Record this value in Table 1 below.
6. Remove the thermometer from the water cup.
7. Quickly pour all of the water into the cup with the Instant Snow.
8. Carefully observe what happens. Feel free to touch the snow you just made. How does it feel? Record your observations in Table 1.
9. Place the thermometer in the cup with Instant Snow and water. Record this temperature in Table 1.

	Water Only	Water + Instant Snow
Temperature		
Your Observations		

Questions

1. Why do you think the temperature of the water changed during this experiment? That is, what was causing the water's temperature change?

2. Compare and contrast Instant Snow with real snow.

*Instant Snow can be purchased through many on-line vendors. Instant Snow is a non-toxic substance that is environmentally safe. The substance is used in the making of baby diapers. Even so, do not ingest the Instant Snow. The Instant Snow can be reused. See vendor notes for details.

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Water Watcher!

The average person in the United States uses about 82 gallons (310 liters) of water each day. Imagine if you had to carry those 82-gallon containers of water from the store to your home each and every day. The current water delivery system that brings water effortlessly to our taps makes it far too easy to waste water. So how can you reduce the amount of water you and those living in your household use?

Here are just a few simple steps.

- Replacing old inefficient toilets can save about 13,000 gallons of water each year.
- Replacing old showerheads with low-flow heads can save about 2,700 gallons of water each year.
- Turning off the faucet while brushing your teeth can save about 4,000 gallons of water each year.
- Tuning up your lawn's irrigation system can save about 7,000 gallons of water each year.
- Running only full loads in the dishwasher can save about 320 gallons of water each year.
- Finding and fixing plumbing leaks can save about 9,000 gallons of water each year.

Since fresh water is a limited natural resource, hopefully you can see the importance of saving water. The above steps are just a few of the many actions you can take to make sure everyone has clean, fresh drinking water today and in the future. Can you think of more water-saving activities that you can integrate into your daily life? Get started today being a water watcher!

Please visit our site for more helpful information:
STEMsims.com

Answers: Page 2 Answers: 1) c, 2) b, 3) d, 4) b, 5) c. **Page 3 Snow Fooling Answers:** 1) The water temperature should have decreased. This is due to two factors. One, the chemical reaction is endothermic. Two, the water started evaporating from the Instant Snow mixture, cooling the mixture down. 2) Answers will vary. Instant Snow looks like snow, but it is *not* water in the solid phase.