Name _____ Date_____

Activity 2: Does it Dissolve?

Guiding Question: Which liquid best dissolves salts?

Key Words: ***dissolve****, evidence, human impact*

Get Started:

1. Boomtown is a community with access both to a river and to the ocean. As seen in the photos in the "Where Should We Build" activity, building to keep up with the increased population will likely involve interactions between land, water, and people.

Your teacher showed the class two containers of transparent, clear liquids. The class was told that both of the containers contained water, but only one would quench thirst. The class had to think about what was different about them. Finally, after tasting the water, they realized that one water also contained dissolved salt.

When a solid is fully dissolved, it is so well mixed that the liquid appears clear or translucent. The dissolved substance doesn't disappear, but its particles have equally mixed with the water. If the water is evaporated, the solids will remain.

Read the introduction and Guiding Question to Activity 2, "Does it Dissolve?" in your Student Book.

Do the Activity:

1. Carefully read the table below to review the different liquids and solids you will investigate in this activity.

CUP	LIQUID	SOLID
1	15 drops of water	2 level scoops of sodium chloride
2	15 drops of ethanol	2 level scoops of sodium chloride
3	15 drops of mineral oil	2 level scoops of sodium chloride
4	None	2 level scoops of sodium chloride
5	15 drops of water	2 level scoops of calcium chloride
6	15 drops of ethanol	2 level scoops of calcium chloride
7	15 drops of mineral oil	2 level scoops of calcium chloride
8	None	2 level scoops of calcium chloride

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2. Create a data table in the space provided to record
   a. your observations of the liquids in Cups 1-8.
   b. your observations of each liquid and solid mixed together.
   c. the amount of solid dissolved in each liquid.

Data:

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3. Read Procedure Steps 3-7 in your Student Book.

4. *Watch the LABsent video (found here:* LABsent Interactions 2*), and record your data.* Each time the video says to record, you may want to pause the video to give you ample time to complete your observations.

Build Understanding:

1. Can you tell how well a solid will dissolve in a liquid based on what the liquid looks like? Support your answer with evidence.

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2. Water is known as the *universal solvent*. Brainstorm a list of substances that dissolve in water.

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3. Brainstorm a list of substances that dissolve in cooking oil.

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4. Tracking changes of energy and matter into, out of, and within systems helps scientists understand the systems' possibilities and limitations. Many cause and effect relationships result from changes of energy and matter. How does the crosscutting concept of *energy and matter* relate to this activity?

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Analysis:

1. Answer the following questions, and then for each mixture, describe the evidence you observed. In this investigation, which mixtures
    a. did not seem to dissolve at all?
    b. dissolved partially?
    c. dissolved completely?

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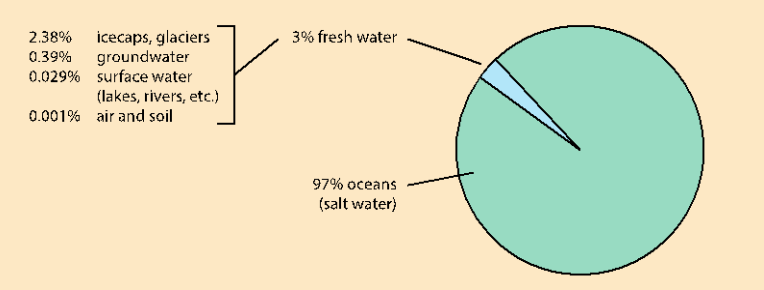
2. All water on Earth contains some dissolved materials, usually salts. Ocean water is about 3.5% salt, with sodium chloride (table salt) being the most common dissolved salt. Calcium chloride is also found on Earth's surface. Would you expect to find calcium chloride in ocean water? Explain.

3. The water on Earth is 97% saltwater found in oceans, seas, and salt lakes, as shown below. Given that salt is common on Earth, explain why you think that most of Earth's oceans contain salts.



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4. In the natural world, water dissolves more substances than any other liquid.
    a. How does this property affect living things?
    b. Why should this property be considered when thinking about the human impact on the environment?

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