

Solutions – Concentration and Dilution

Engage

Jose stirred a spoon full of sugar into a glass of warm tea. The sugar complexly dissolved in the water. Put an X next to the statements that are true about the dissolved sugar.

| |
|--|
| A. The sugar melts. |
| B. The sugar loses mass |
| C. The sugar turns into water molecules. |
| D. The sugar forms a mixture with the water. |
| E. The sugar forms a solution with the water. |
| F. The sugar can be separated from the water. |
| G. The sugar disappears and no longer exists. |
| H. The sugar molecules are spread among the water molecules. |
| I. Sugar breaks down into the individual atoms that make up sugar. |
| J. The sugar chemically combines with the water to form a new substance. |

Explain your thinking. Describe what happens when sugar dissolves in water.

Explore

Materials: small. Medium. and large size of clear water bottles full of water, small drinking cups (3 per student), 3 packages of powered drink mix

What To Do:

1. Observe as your teacher demonstrates the following.
2. Pour one complete packet of powdered drink mix into the smallest bottle of water. Shake to mix well.
3. Pour one complete packet of powdered drink mix into the medium bottle of water.
4. Pour one complete packet of powdered drink mix into the large bottle of water.
5. Display the bottles so everyone can see.
6. Color the bottles below showing the different shades of color inside.



7. Your teacher will pour a small amount of each bottle into the drinking cups for each student.
8. Taste each one and describe how each tastes and smells.

Small bottle _____

Medium bottle _____

Large bottle _____

1. Place the definition of each word under the flap.
2. Cut out the pictures at the bottom and glue them to the back of the flap to illustrate the concept.

Explain

STRENGTHS OF SOLUTIONS

DILUTION

CONCENTRATION

Elaborate

What To Do:

1. A cup of instant tea is an aqueous solution.
2. Two different cups of tea are shown in Figures A and B. Study them, then fill in the blanks using the Word Bank.



Figure A

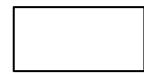
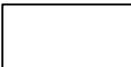


Figure B

WORD BANK

| | | | |
|-----------|-------------|--------------|-------|
| dissolves | instant tea | different | water |
| stronger | solute | concentrated | same |

1. The instant tea _____ in the water.
2. In both solutions the solute is the _____.
3. In both solutions the solvent is the _____.
4. The cup of tea in Figure A has more _____ compared to the solution in Figure B.
5. The solution in Figure A is _____ than the solution in Figure B.
6. The solution in Figure A is more _____ than in the solution in Figure B.
7. The amount of solvent is the _____ in both solutions.
8. The amount of solute is _____ in both solutions.



What to Do:

Read through the Word Bank and the fill in the blanks statements below.

Watch the first 1:39 of the following video just to watch and listen.

Saturated Solutions – Middle School - Khan Academy

<https://www.youtube.com/watch?v=vLT46L48orE>

Read through the Word Bank and the statements again.

Watch the video and fill in the blanks.

WORD BANK

| | | |
|-----------|-----------|---------|
| dissolves | saturated | solvent |
| water | solution | |

1. When a spoonful of sugar is stirred into water it _____ fully.
2. When a second spoonful of sugar is stirred into the _____, the sugar does not dissolve fully.
3. When no more of a substance can dissolve in a fixed amount of water, we say the solution is _____.
4. A solvent plus a solute make a _____.
5. A saturated solution is a mixture where no more solute can dissolve in the _____.
6. The solution in the test tube below that is probably saturated is _____.

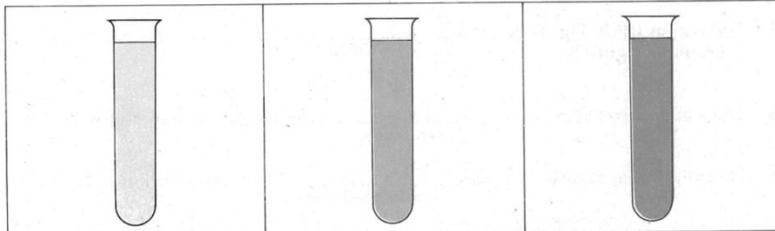


Figure C

Figure D

Figure E

Evaluate

Name _____ period _____

EXIT TICKET

Solutions Concentration and Dilution

1. A solute and a solvent make a –

- A. solute
- B. solvent
- C. concentration
- D. solution

2. How strong a solution is known as its –

- A. solute
- B. solvent
- C. concentration
- D. solution

3. Adding more solvent to a solution makes it –

- A. stronger
- B. weaker
- C. colorful
- D. concentrated

4. Adding more solute to a solution makes it –

- A. stronger
- B. weaker
- C. colorful
- D. diluted

5. If no more solute can be added to a solution, is it said to be –

- A. stronger
- B. weaker
- C. saturated
- D. diluted