DAY 3 5TH GRADE SCIENCE

Matter and Mixtures

Performance Indicator: 5.P.2B.4 Construct explanations for how the amount of solute and the solvent determine the concentration of a solution.

Essential Question(s):

What happens to the concentration of a solution when the amount of solvent is changed?

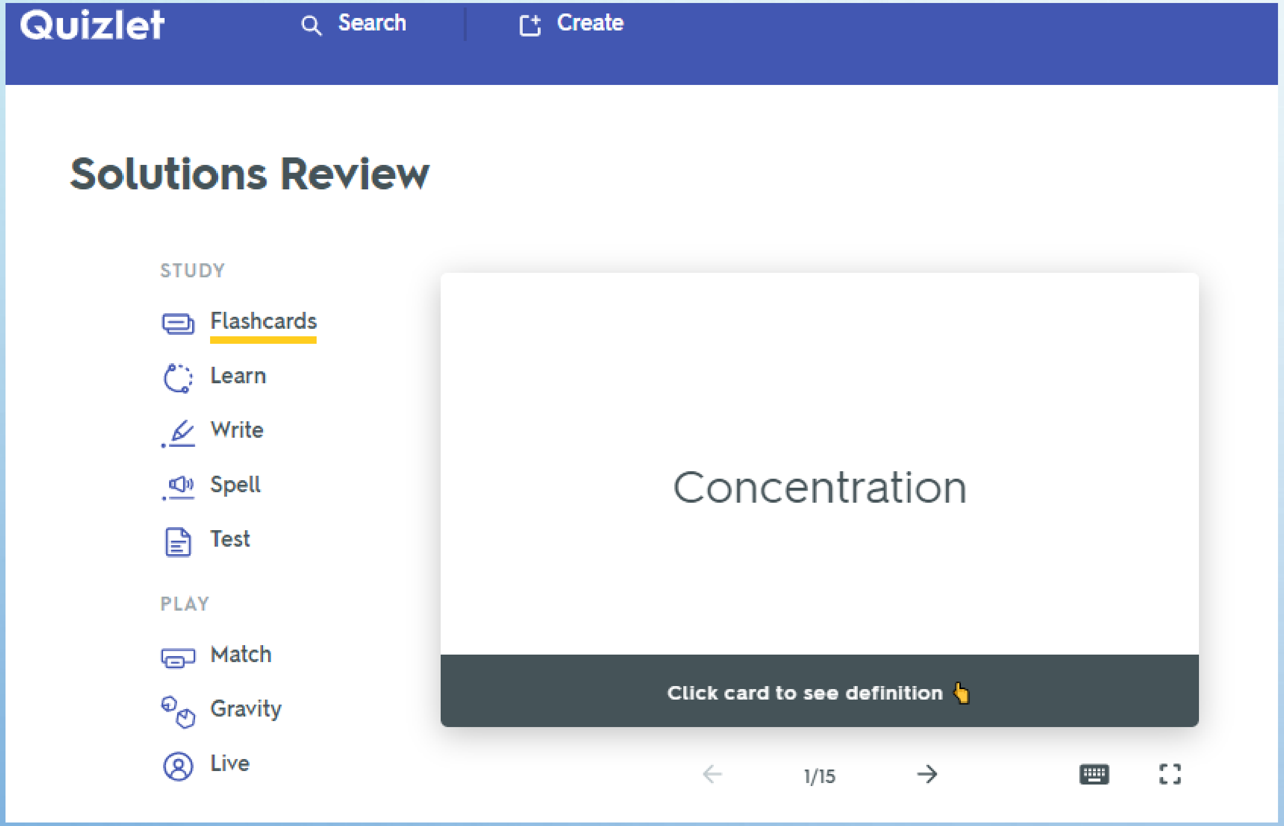
How can you determine the concentration of a solution?

I-Can Statements:

I can explain how the concentration of a solution is affected when you change amount of solvent.

I can determine the concentration of a solution.

Engage Activity



Study the quizlet flashcards on the next slide.

[Solutions Quizlet]

Engage Activity

Concentration	the amount of solute in a solvent determines this
Solution	a type of mixture which has one substance dissolved in another
Solvent	the part of a solution that is in the greatest amount and is usually a liquid
Mixture	two or more substances which are combined but can be taken apart again
Solute	the part of a solution that is the lesser amount and is usually a solid
What is matter?	anything that takes up space
What are the three states of matter?	solid, liquid, and gas
Describe the properties of solids	Close, tightly packed particles. Definite shape and volume. Does not flow. Particles vibrate in place.

Describe the properties of liquids	Particles move but are relatively close. Shape is like container. Definite volume. Flows. Particles move freely
Describe the properties of gases	Particles are far apart. Expand to fit the container they are in. Move wildly
If you would like to concentrate a solution, then you must add more _________ to the solution.	solute
What factors affect the rate of dissolving a substance?	stirring, shaking, heat, crushing
Name three solutions	chocolate milk, lemonaide, salt water
Explain why the following statement is true: All solutions are mixtures, but not all mixtures are solutions.	A solution is a type of mixture where one substance is dissolved in another but a mixture is just a combination of items
Describe how particles are spaced in each state of matter.	solid: tight, closely packed particles. Liquid: loose, flowing particles. Gas: randomly moving particles.

Engage Activity

You have just finished reviewing solutions with the Quizlet flashcards. Think about the content and vocabulary words. Did you come across anything that you didn't know or still have questions about? If you knew all of the content and vocabulary words, what additional information or vocabulary would you have added? Please list your responses in the space below.

Exploration Time

Solutions are a special type of mixture in which one substance is dissolved evenly into another substance.

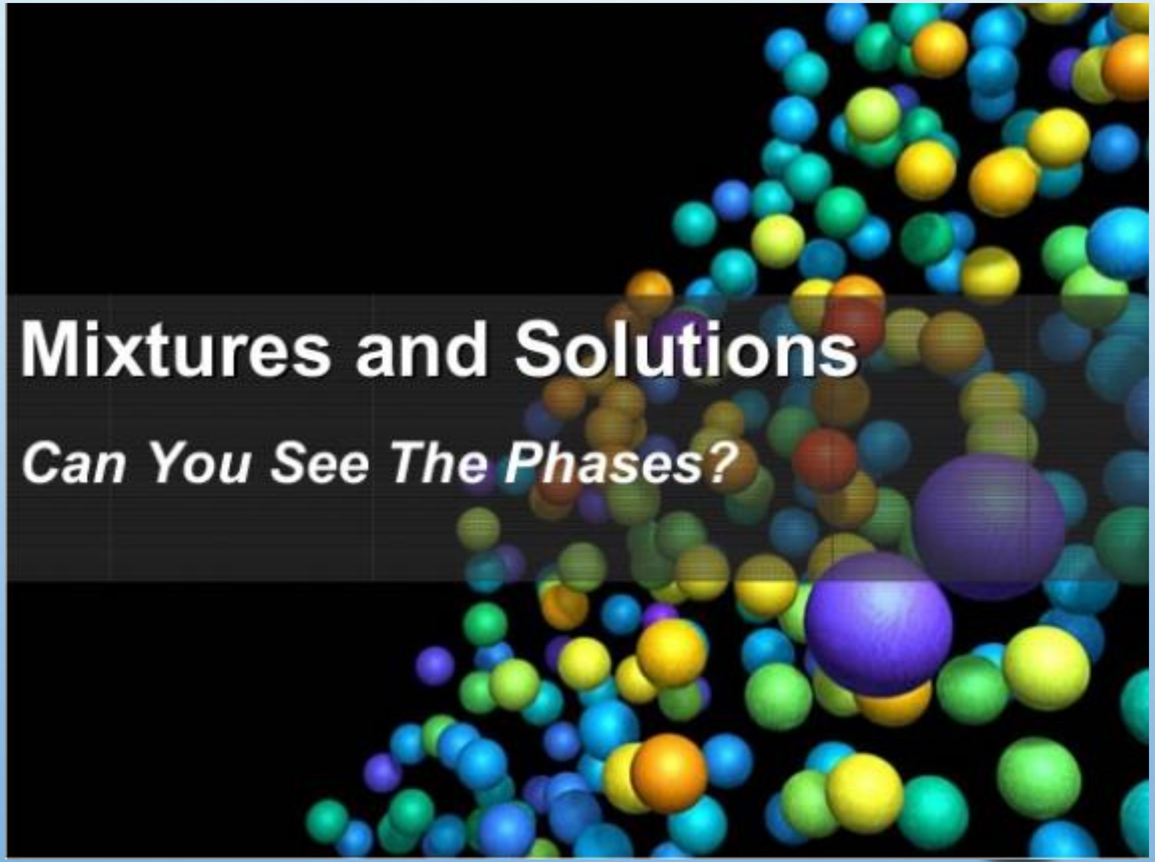
The substance in a solution that has the greatest amount is the ***solvent.*** It is usually the liquid.

The substance in a solution that has the least amount is the ***solute***. It is usually the solid.

Concentration is a measure of the amount of solute dissolved in a solvent.

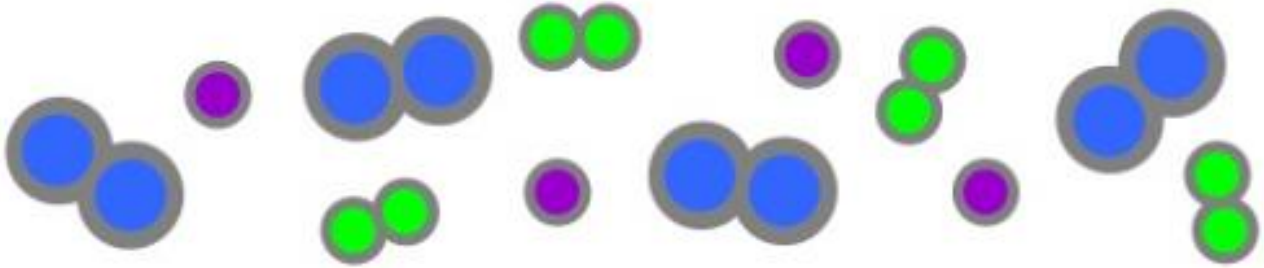
Exploration Time

Directions: Read the information from the Mixtures and Solutions Slideshare.



What Is A Mixture?

A mixture is made of **2 or more** types of atoms that are **NOT** chemically combined together.



Mixtures can take many forms:

- 2+ Solids
- 2+ Liquids
- 2+ Gases
- ANY combination of solids, liquids & gases


Mixtures of Solids


Mixtures of Liquids

Mixtures of Gases

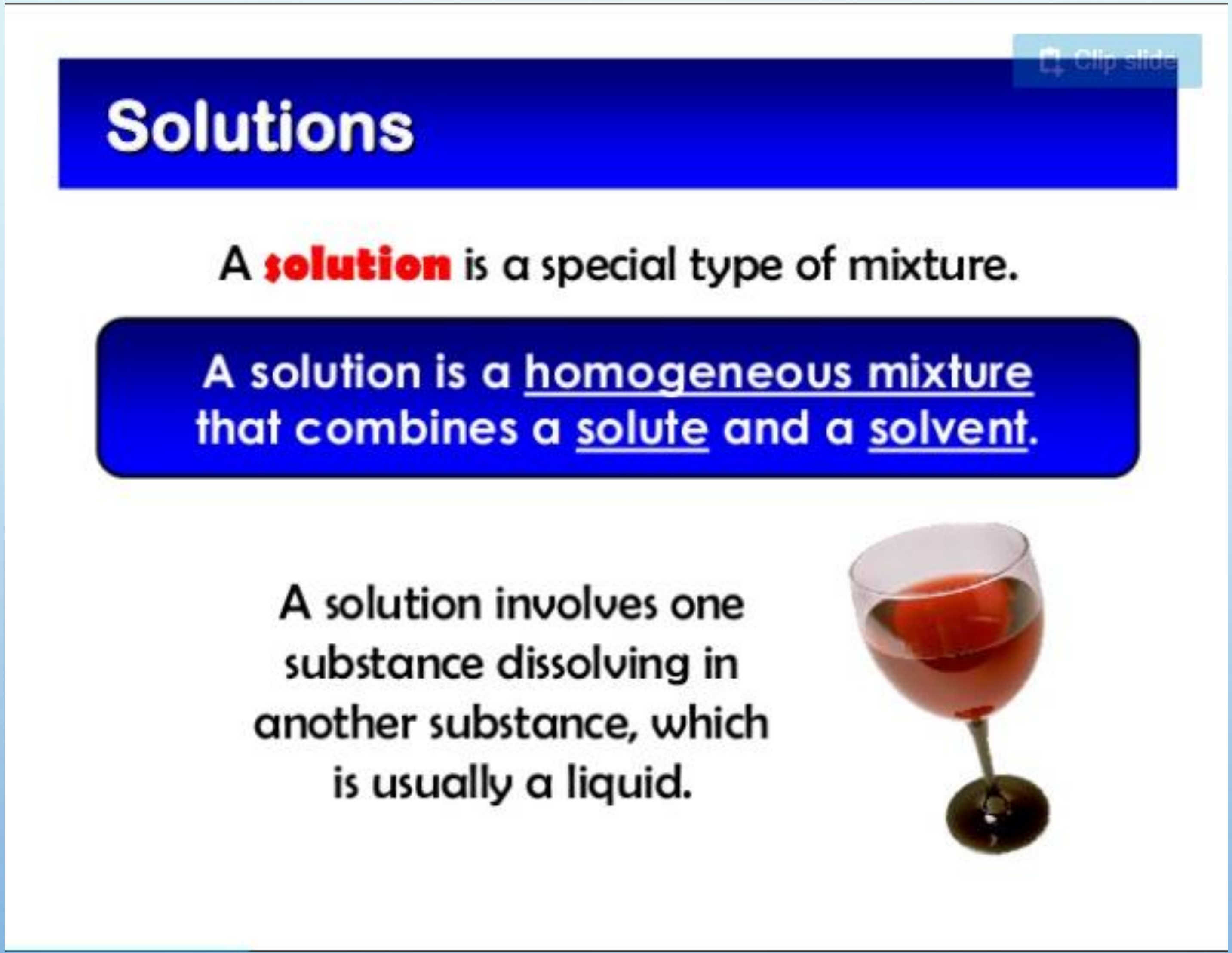
Types Of Mixtures

There are 2 major types of mixtures:

Heterogeneous	Homogeneous
Means "*different*"	Means "*the same*"
You can see the different parts (phases) of the mixture easily	You cannot see the different parts (phases) of the mixture


Heterogeneous Mixtures

Homogeneous Mixtures

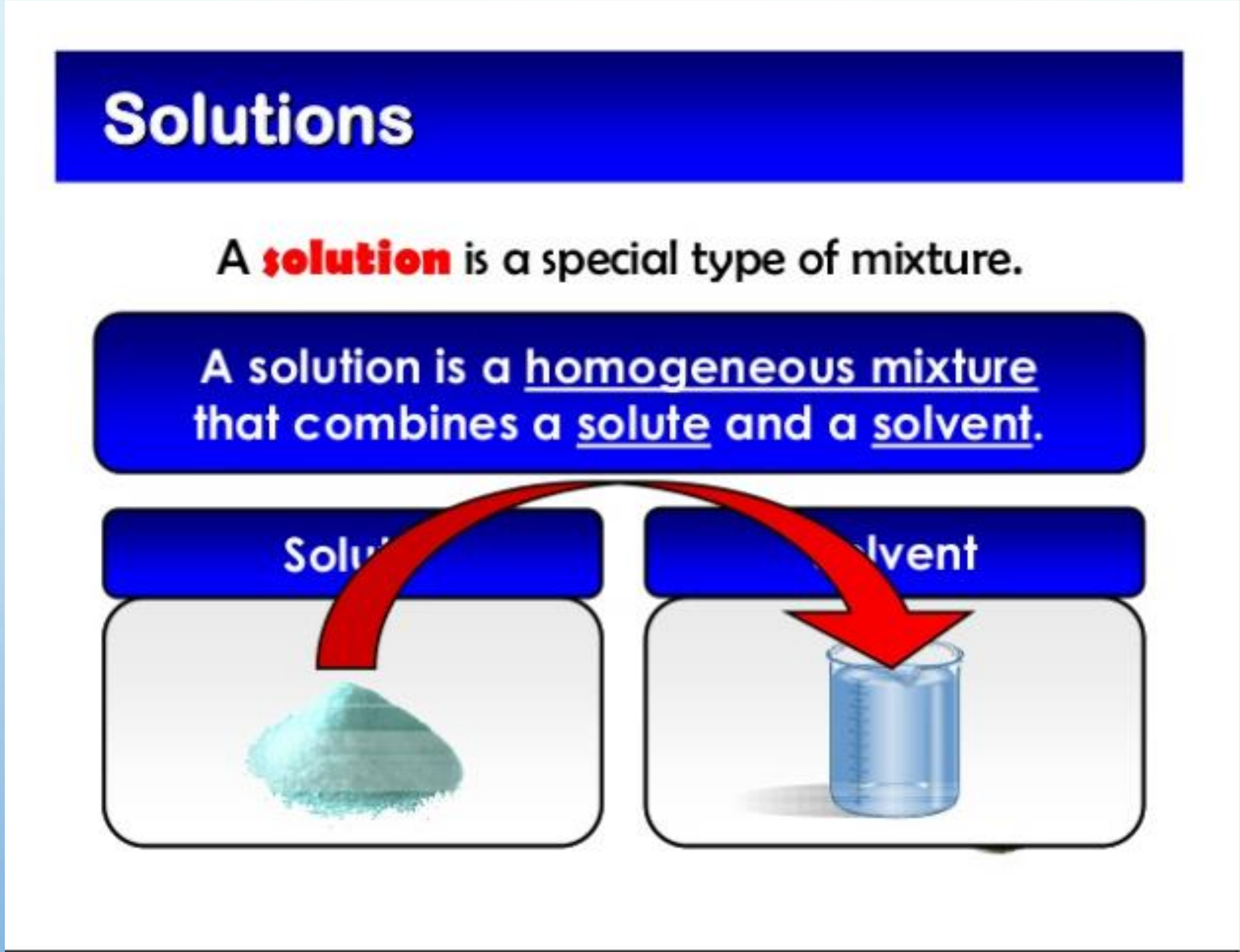

Solutions
A solution is a special type of mixture.
A solution is a homogeneous mixture that combines a solute and a solvent.
A solution involves one substance dissolving in another substance, which is usually a liquid.

Solutions

A **solution** is a special type of mixture.

A solution is a homogeneous mixture that combines a solute and a solvent.

Solute	Solvent
The solid part that gets dissolved.	The liquid part that does the dissolving.
e.g. salt, sugar	*e.g. water*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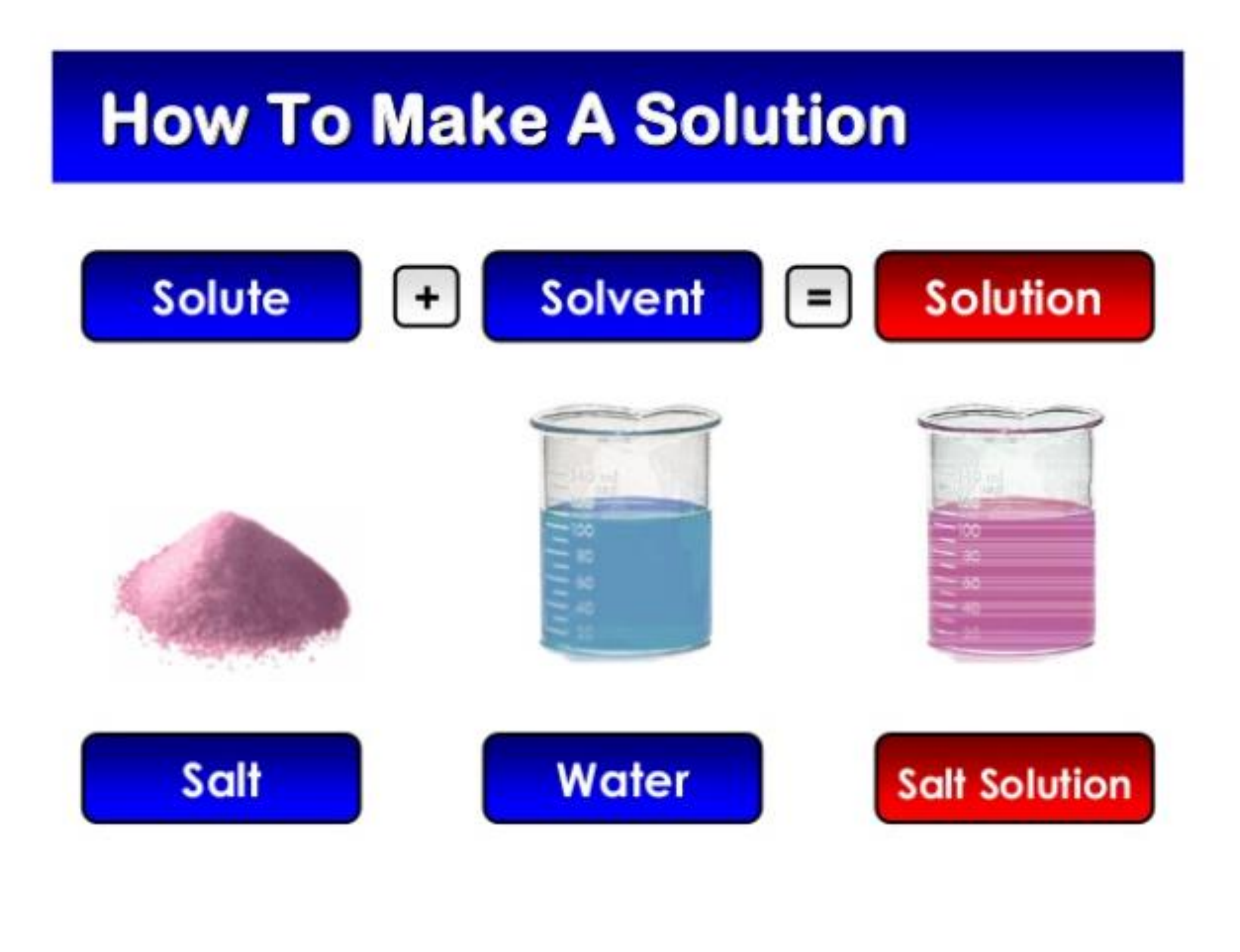

How To Make A Solution
Solute
+
Solvent
=
Solution
Salt
Water
Salt Solution

Solution Examples

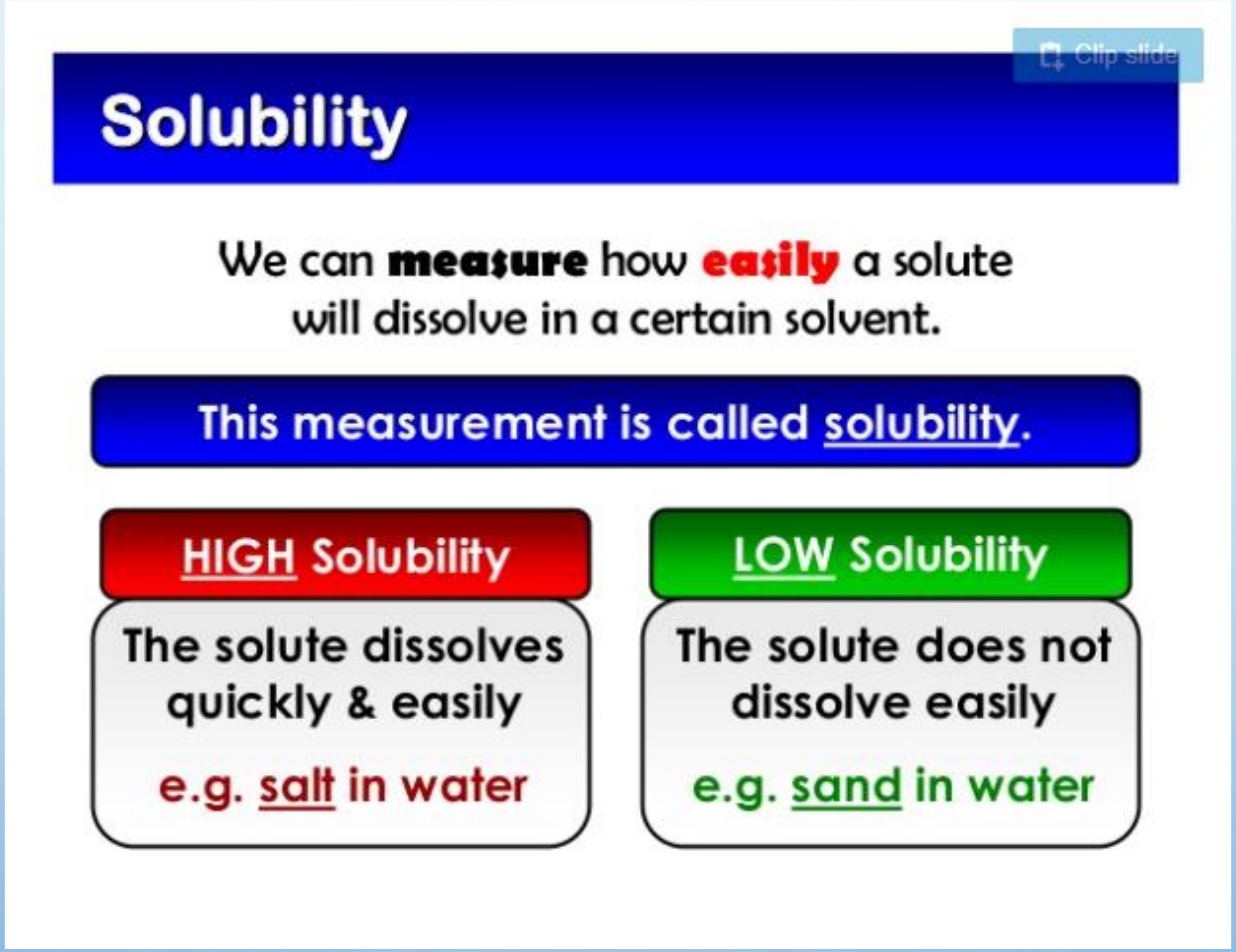
Sweet Tea

Lemonade

Kool Aid

Salt and Water

Chocolate Milk

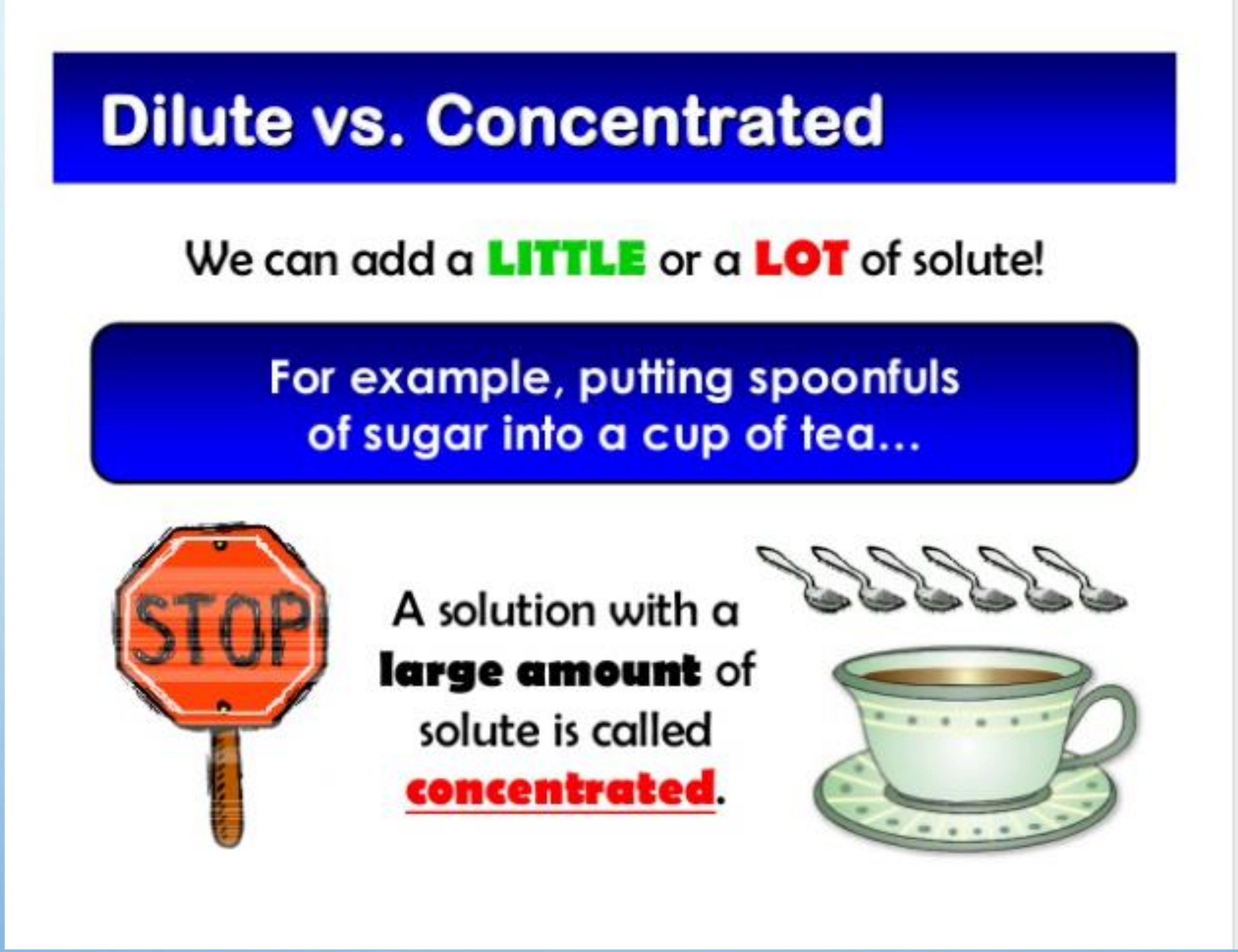

Solubility
We can measure how easily a solute will dissolve in a certain solvent.
This measurement is called solubility.
HIGH Solubility
The solute dissolves quickly & easily
e.g. salt in water
LOW Solubility
The solute does not dissolve easily
e.g. sand in water

Dilute vs. Concentrated

We can add a **LITTLE** or a **LOT** of solute!

For example, putting spoonfuls of sugar into a cup of tea…

A solution with only a **small amount** of solute is called a **dilute** solution.


Dilute vs. Concentrated
We can add a LITTLE or a LOT of solute!
For example, putting spoonfuls of sugar into a cup of tea...
STOP
A solution with a large amount of solute is called concentrated.


Clip slide
Saturated Solutions
Eventually, a solvent can't hold anymore!
A saturated solution CANNOT hold any more solute at a certain temperature.
STOP

Scavenger hunts are exciting ways to gather information. They require you to search in different areas as you look for specific things.

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Search through all of the slides in this Powerpoint and find the information that you need to answer the questions below. Be sure to check your work!

3 different examples of solutions:

2 Different types of mixtures:

1 of the four factors that affects the rate of dissolving a substance:

So What Have I Learned?

In 20 words or less, write a statement that teaches someone something about solutions.