



Engage

Creating New Substances

Directions: Read through the list of the following items. Place a C by the items you think may be a chemical and leave the ones you think are not chemicals blank.

	Water (H ₂ O)
	Blood
	Energy
	Carbon Dioxide (CO ₂)
	Sugar
	Beans
	Bones
	Sound
	Rocks
	Heat
	Gravity
	Oxygen (O ₂)
	Sunshine

1. How many items did you choose? .
2. There are 8 chemicals listed in this group. The items that are NOT chemicals are energy, sound, heat, gravity, and sunshine.
3. Looking at the list of chemicals, what states of matter can chemicals be?
4. Can chemicals be mixtures?
5. Can chemicals be solutions?
6. Can chemicals be pure substances?



Explore

New Substance #1. Teacher Demo

Materials: Beaker, vinegar, piece of steel wool, tongs,

What To Do:

1. Your teacher will show you some dry steel wool.
Steel wool is long, thin strips of the element iron (Fe).
2. Your teacher will place one piece of the steel wool in the vinegar and stir it around for about 1 minute. Then they will take the steel wool out of the vinegar and allow the wet steel wool to dry on a paper towel for at least 30 minutes so that the iron can mix with the oxygen in the air.

New Substance #2

Materials: baking soda, vinegar, portion cup, spoon, graduated cylinder

What To Do:

1. Place 1 spoonful of baking soda in the portion cup.
 2. Place 20 mL of vinegar on the baking soda. Observe what happens.
1. What did you observe happening?
 2. What new substance was produced?

New Substance #3

Materials: ammonia, portion cup, grape juice, graduated cylinder

What To Do:

1. Place 20 mL of grape juice in the portion cup.
 2. Place 20 mL of ammonia in the portion cup. Observe what happens.
1. What did you observe happening?
 2. What new substance was produced?

New Substance #4

Materials: beaker, water, Damp Rid (CaCl₂), spoon, thermometer, graduated cylinder

What To Do:

1. Measure 30 mL of water into a graduated cylinder and then pour it into the beaker.
2. Take the temperature of the water. _____
3. Place a small spoonful of Damp Rid in the water and stir.
4. Take the temperature of the solution after 1 minute. _____



1. What did you observe happening?
2. What new substance was produced?

New Substance #4 Teacher Demo

Materials: baking soda, Damp Rid, 2 beakers with 50 mL of water, small spoon

What To Do:

1. Mix 2 small spoonfuls of baking soda in one of the beakers of water. – Note color.
2. Mix 2 small spoonfuls of Damp Rid in the other beaker of water. – Note color.
3. Pour the solution of baking soda into the solution of Damp Rid. Note color.

1. What did you observe happening?
2. What new substance was produced?

New Substance #5 Teacher Demo

Materials: glow stick or bracelet

What To Do:

1. Watch while your teacher shows you a glow stick.
2. Observe what happens when they break it and the two chemicals inside mix.

1. What did you observe happening?
2. What new substance was produced?

Your teacher will allow you to observe the steel wools that was soaked in vinegar. Be sure to use your sense of sight and smell.

1. What happened to the steel wool?
2. What new substances were produced?

Explain

To help remember the clues for a chemical change we can remember the sentence: **City Girls Love Their Phones On.**

Clues That A New Substance Was Created	What clue does the C stand for?
	CITY
	What clue does the G stand for?
	GIRLS
	What clue does the L stand for?
	LOVE
Anchor Tab	What clue does the T stand for?
	THEIR
	What clue does the P stand for?
	PHONES
	What clue does the O stand for?
	ON



Elaborate

What To Do:

1. Watch the Rainbow Elephant's Toothpaste video at <https://www.youtube.com/watch?v=ei5kGOW1wT8>

2. Answer the following questions:

a. What two clues that a new substance had been created did you observe in the video?

b. What new substance was produced?

3. Watch the Crash Course Kids Chemical Change video at https://www.youtube.com/watch?v=37pir0ej_SE

4. Answer the following questions:

a. Which of the clues did you observe in the scenes of the burning match?

b. Which of the clues did you observe in the scenes of baking the cake?



Evaluate

Name _____ period _____

EXIT TICKET

Creating New Substances

Directions: Circle the clues that tell us a new substance has been made.

Color Change

Invisibility

Snap, Crackle, Pop sounds!

Formation of a Gas

Temperature goes up

Music plays

A solid forms

Conclusion: (gas, precipitate, solid, new, clues)

When elements or compounds combine, they can make a _____ substance. There are several _____ that tell us a new substance has been made. When the baking soda was mixed with the vinegar the new substance was the formation of a _____ in the form of bubbles. When two liquids mix and make a _____, the solid is called a _____.