

Sample Lesson Plan – Career Day

Lesson Title/Topic: Adventures in Learning

Concept: Chemist

Standards/Rationale: 112.17 (b) (2) (B) & 112.17 (b) (4) (A&B)

Learning Target	Assessment
The student will understand, and creatively role play, the characteristics of a chemist.	Completed writing prompt

Materials:

- Adventures in Learning Tri-Fold
- Towels for Cleanup
- Activity Ingredients for each student:

Elephant Toothpaste (Activity #1)	Rock Salt Ice Cream (Activity #2)
<ul style="list-style-type: none"> - 16ounce Plastic Bottle filled with $\frac{1}{4}$ cup of Hydrogen Peroxide - $\frac{1}{2}$ tbsp Dry Yeast - $1\frac{1}{2}$ tbsp Warm Water - $\frac{1}{2}$ tbsp Dish Soap - 4 drops Food Coloring - Safety Goggles - “Mess Containment” tub 	<ul style="list-style-type: none"> - Gallon Sized Plastic Bag - Sandwich Size Plastic Bag - $\frac{1}{4}$ tbsp Vanilla Extract - 2 tbsp Rock Salt - 2 tbsp Sugar - $\frac{1}{2}$ cup Milk - 2.5 cups Ice - Spoon

Instruction:

	The teacher will:	The student will:
Focus/Mental Set	<ul style="list-style-type: none"> - Turn to the person next to you, and tell them 3 types of scientist that you know about 	<ul style="list-style-type: none"> - Participate by telling their partner three types of scientists
Teacher Input (I Do)	<ul style="list-style-type: none"> - The type of scientist we are going to be discussing today is a Chemist! - How much do Chemists get paid? <ul style="list-style-type: none"> - \$72,610 - What kind of education do you need to be a Chemist? <ul style="list-style-type: none"> - Bachelor of Science in Chemistry - Where can I get this Education? <ul style="list-style-type: none"> - Rice University (Houston, Texas) 	<ul style="list-style-type: none"> - Listen to the teacher/presenter - Ask questions when needed

	The teacher will:	The student will:
	<ul style="list-style-type: none"> - University of Texas (Austin, Texas) - Texas A&M University (College Station, Texas) - Southern Methodist University (Dallas, Texas) - Where do Chemist's Work? <ul style="list-style-type: none"> - Colleges - Medicine Industry - Power Industry - Government Laboratories - What do Chemists do? <ul style="list-style-type: none"> - Chemists analyze substances - Chemists create, or synthesize, new substances 	
Guided Practice (We Do)	<ul style="list-style-type: none"> - Activity 1: Exothermic Reaction - "Elephant Toothpaste" <ul style="list-style-type: none"> - Provide items from Supply List - "OBSERVATION: the act of recognizing or noting a fact or occurrence." - "INFERENCE: a conclusion based on observation." - Facilitate the Activity - Discussion <ul style="list-style-type: none"> - "What did you observe during this experiment?" - "Why do you think... is happening?" - "What inferences can we make based on these observations?" - "EXOTHERMIC REACTION: energy is released, and heat is created" 	<ul style="list-style-type: none"> - Activity 1: Exothermic Reaction - "Elephant Toothpaste" <ul style="list-style-type: none"> - Put on Safety Goggles - Add Food Coloring of their choice to the bottle - Add Dish Soap to the bottle - Combine water and yeast in a small cup & mix for 30 seconds - Place bottle into "mess containment tub", pour mixture into the bottle, and <i>observe</i>! - DISCUSSION <ul style="list-style-type: none"> - Answer the Question - Answer the Question - Answer the Question

	The teacher will:	The student will:
	<ul style="list-style-type: none"> - Activity 2: Endothermic Reaction - Rock Salt Ice Cream <ul style="list-style-type: none"> - Provide items from supply list - During the kneading process: <ul style="list-style-type: none"> - “Compare the Elephant Toothpaste to the Rock Salt Ice Cream. What do you notice is different about this chemical reaction? What do you notice is the same?” - “When do you think this kind of reaction would be useful in the job of a Chemist?” 	<ul style="list-style-type: none"> - Activity 2: Endothermic Reaction - Rock Salt Ice Cream <ul style="list-style-type: none"> - Combine milk, sugar, and vanilla into the sandwich sized Bag & TIGHTLY SEAL - Place that bag into another sandwich sized bag and TIGHTLY SEAL - Combine the ice and rock salt into a gallon-sized storage bag - Place the sandwich-sized bag into the gallon-sized bag, and knead for 5-7 minutes, until the substance in the sandwich bag resembles ice cream. - During the Kneading Process: <ul style="list-style-type: none"> - Answer the Question - Answer the Question
Independent Practice (You Do)	Distribute Writing Prompt (see attachment)	Respond to Writing Prompt
Closure	Facilitate Kahoot! Quiz	Respond to 5 questions via Kahoot!

Options:

Enrichment	Reteach
<ul style="list-style-type: none"> - Chemical Reactions Crossword Puzzle 	Create an anchor chart with differences between: <ul style="list-style-type: none"> - Endothermic and Exothermic Reactions - Observations and Inferences
Modification (SPED)	Accommodation (504)
Traumatic Brain Injury <ul style="list-style-type: none"> - Provide Frequent, Short Breaks 	Dyslexia: <ul style="list-style-type: none"> - Provide verbal instructions to labs - Allow use of a computer for writing prompt

Modification (SPED)	Accommodation (504)
- Allow Oral Communication of thoughts instead of the critical writing prompt	

Bloom's Taxonomy Levels	Technology Integration
Knowledge Comprehension Application Analysis Synthesis Evaluation	Closure: Kahoot Quiz

ELEPHANT TOOTHPASTE

Supplies:

- | | | |
|---|--|--|
| - 16ounce Plastic Bottle filled with $\frac{1}{4}$ cup of Hydrogen Peroxide | - 1 tsp Dry Yeast
- 5 tsp Warm Water
- 1 tsp Dish Soap | - 4 drops Food Coloring
- Safety Goggles
- Spoon/Mixer |
|---|--|--|

Activity:

1. Read ALL of the instructions before you begin!!
2. Put on your Safety Goggles!
3. Into your bottle:
 - a. Add 4 drops of your favorite food coloring
 - b. Add 1 tsp of dish soap
4. Place the cap on the bottle and "Swish" around the bottle to mix everything up!
5. In a separate smaller cup:
 - a. Pour 5 tsp of water into the cup
 - b. Add the 1 tsp of Dry Yeast
 - c. Use a coffee stir to mix everything up!
6. Pour the yeast mixture into an EASY POUR DEVICE
7. Take the cap off of the bottle
8. Pour the contents of the cup into the bottle
9. Observe, thinking about these questions:
 - a. What does it smell like?
 - b. What does it look like?
 - c. What is changing about the substances?

ROCK SALT ICE CREAM

Supplies:

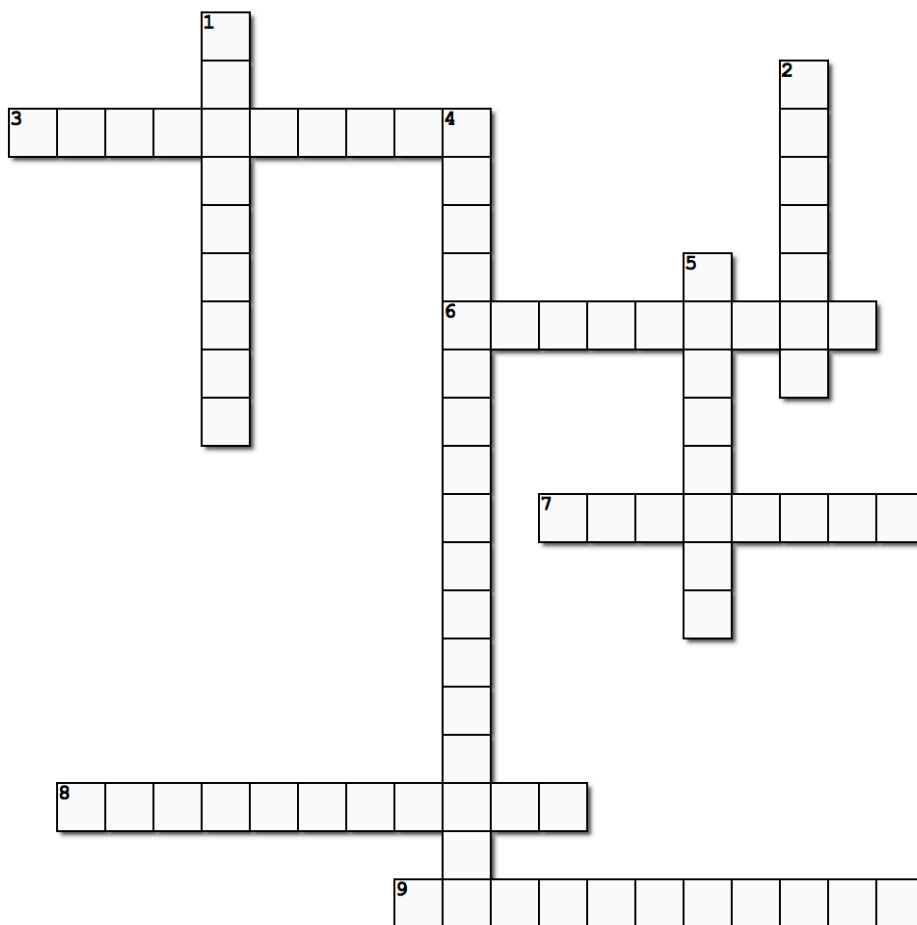
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|--------------------------------|-------------------------|--------------|
| - Gallon Sized Plastic Bag | - ½ tsp Vanilla Extract | - ¼ cup Milk |
| - 2 Sandwich Size Plastic Bags | - 2 tbsp Rock Salt | - 3 cups Ice |
| | - 1 tbsp Sugar | - Spoon |

Activity:

1. Read ALL of the instructions before you begin!!
2. Add to the 1st sandwich bag:
 - a. ¼ cup of milk
 - b. ½ tsp vanilla extract
3. Seal the 1st sandwich bag TIGHTLY
4. Place the 1st sandwich bag into the 2nd sandwich bag
5. Seal the 2nd sandwich bag TIGHTLY
6. Add to the gallon-sized bag:
 - a. 3 cups ice
 - b. The sandwich bags
7. Seal the gallon-sized bag TIGHTLY
8. Shake & Knead the bag for 5-7 minutes
10. Observe, thinking about & discussing these questions:
 - a. What does it look like?
 - b. What is changing about the substances?
 - c. How can you tell that a chemical reaction is happening?
9. Eat your ice cream!

Name: _____

CHEMICAL REACTIONS



Down	Across
1. a(n) _____ is used to slow down the reaction	3. a _____ reaction that releases heat, causing the temperature of the immediate surroundings to rise
2. the substance that is produced by a chemical reaction	6. a conclusion reached on the basis of evidence and reasoning
4. a process where a set of substances undergo a chemical change to form a different substance	7. a(n) _____ helps to speed up the rate of reaction
5. any substance that is used up during the reaction	8. the act of recognizing or noting a fact or occurrence.
	9. a _____ reaction that absorbs heat and cools the surroundings

MARS EXPLORATION

We've just landed on Mars. YOU are the lead Chemist on the expedition. Your team is setting up your lab when the newly appointed President of Mars (Mrs. Usrey) approaches you with a never before seen substance.

Write a single-page paper outlining the steps you would take to discover at least 2 properties of the material.

Food for thought:

- What would you prioritize?
- Decide if the material is useful for the colonization of the planet.
- Justify your positions and steps