10.15.13 Physical Vs Chemical Foldable

OBJ: We will be able to differentiate between chemical and physical changes in matter by creating a foldable.

S Identify the elements and number of atoms that make up lactose (milk sugar) $C_{12}H_{22}O_{11}$.

Table of Contents

Date	Lecture/ Activity/ Lab	Page(s)
10/07/13	Unit 4 Vocabulary	
10/08/13	EduSmart: Elements & Compounds	
10/09/13	Element or Compound Lab	
10/10/13	Compounds Reading	
10/15/13	Physical Vs Chemical Foldable	

Read the standard.

Matter and energy. The **student knows the differences between elements and compounds**.

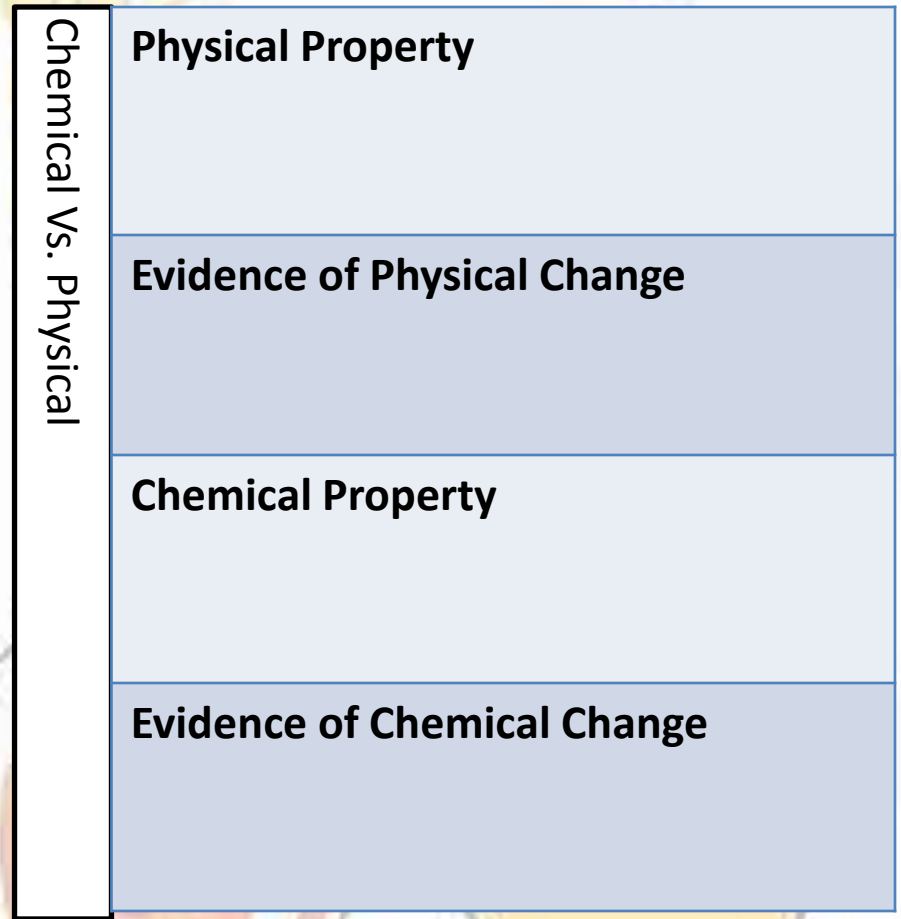
The student is expected to:

- (C) **Differentiate** between elements and compounds on the most basic level.

- (D) **Identify** the formation of a new substance by using the evidence of a possible chemical change such as production of a gas, change in temperature, production of a precipitate, or color change.

P Video on Chemical vs Physical Changes

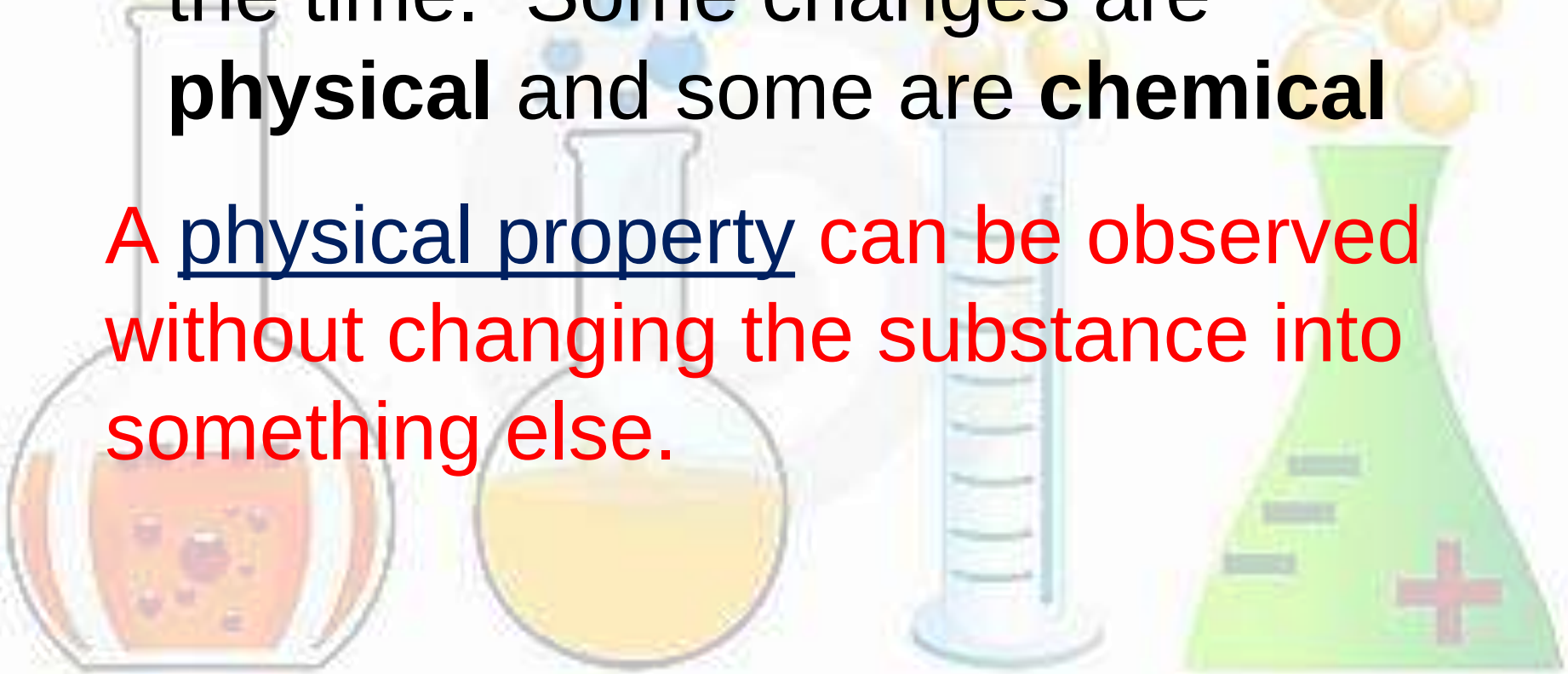
A: Foldable


Chemical Vs. Physical
Physical Property
Evidence of Physical Change
Chemical Property
Evidence of Chemical Change

Did you know?

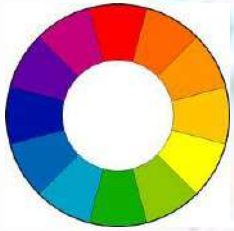
- Matter is changing around you all the time. Some changes are **physical** and some are **chemical**

A physical property can be observed without changing the substance into something else.

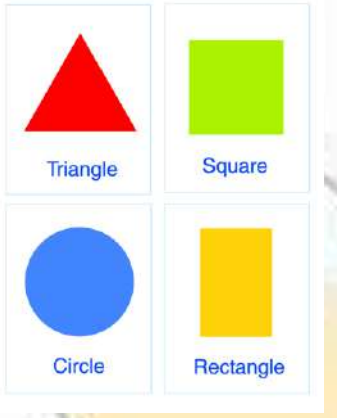


Do you remember what Physical Properties are???

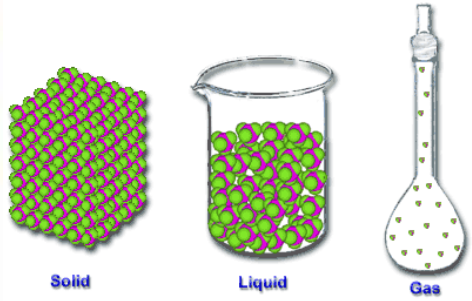
- Color



- Shape



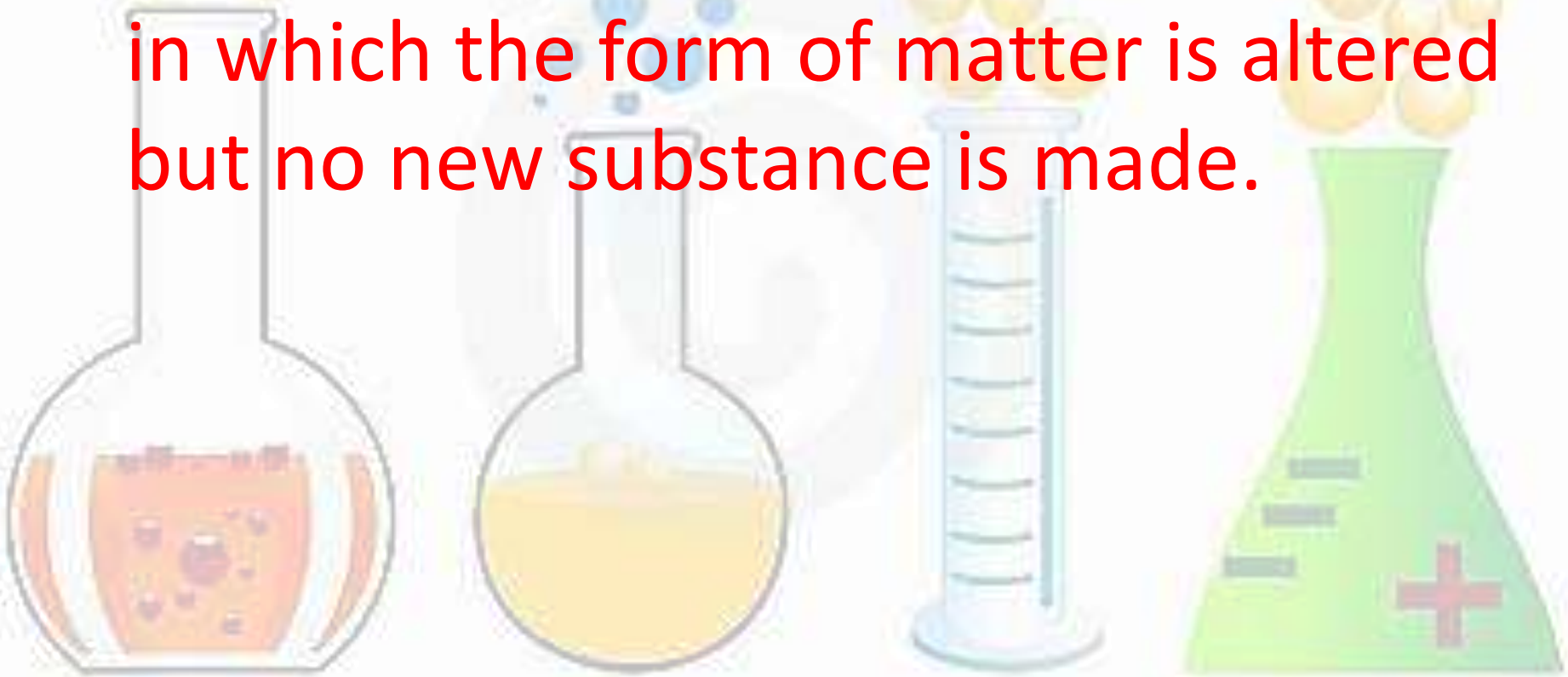
- Mass
- Volume
- State of Matter



- Length
- Magnetism
- Texture
- Density

Physical Change

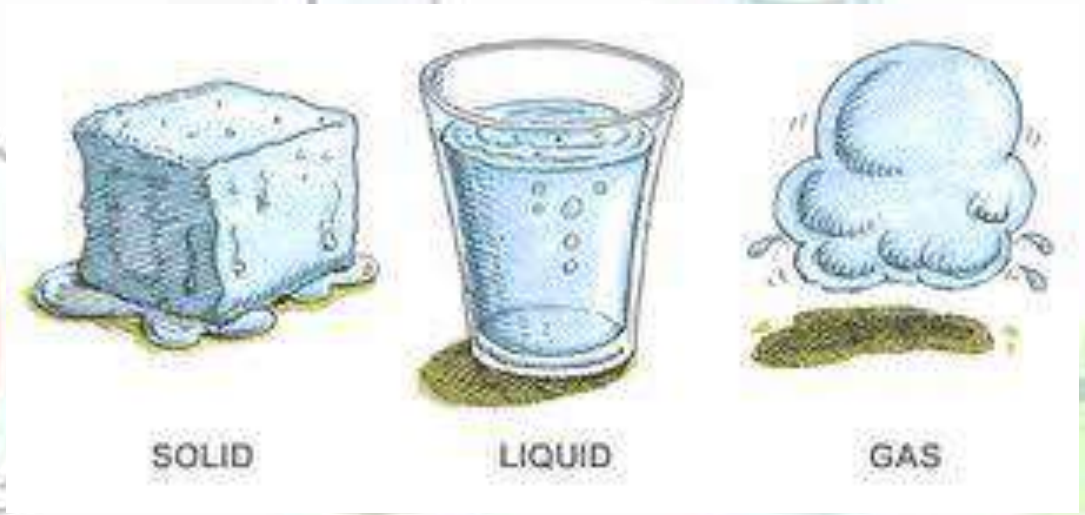
- A physical change is a type of change in which the form of matter is altered but no new substance is made.



A: Evidence of Physical Change

- A new substance is NOT created
- You can get back what you had before

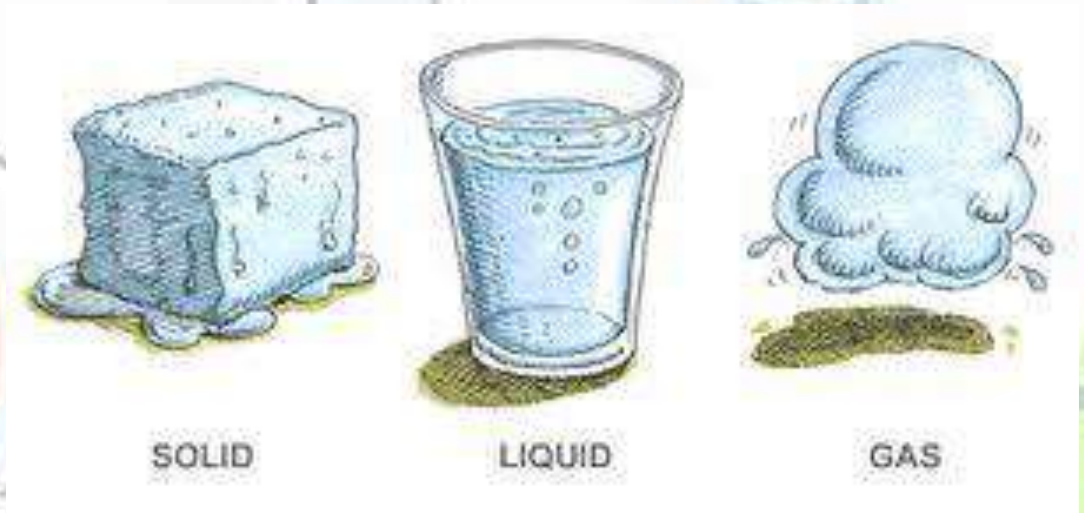
Water → Water



What does this mean?

- Only **one** substance goes into the reaction and **one** substance comes out.

Water → Water



Evidence of Physical Change

Cutting a Steak

→

Steak → Steak

What physical property changed?

- Size, shape, mass, volume

- Is it still the same substance?
  - This is a physical change because before and after being cut the substance is still steak even if the size, shape, and other physical properties changed

Bending Metal Wires

→

Metal wires→ Metal wires

What physical property changed?

- What physical property changed?
  - Shape
- Why is this a physical change?
  - Bending metal wires is a physical change because a physical change means that no new substance is produced.

Ice Cream Melting

→

Ice cream → Ice cream

What physical property changed?

- State of matter
  - Solid → Liquid

- Is it still the same substance?
  - This is a physical change. The only thing that changed about the ice cream is its state of matter (solid to a liquid) but it is still ice cream after it melts.

Chemical Property

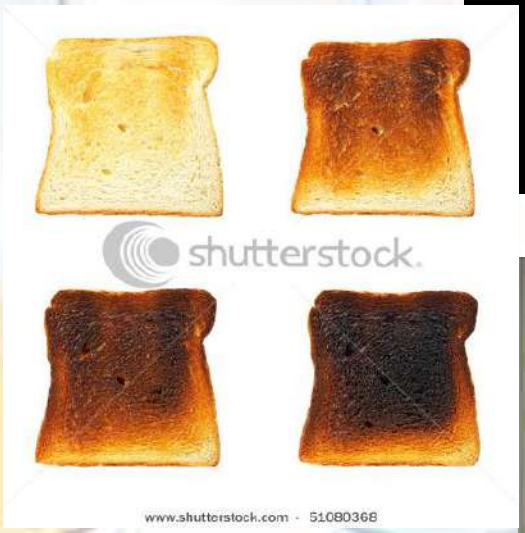
- The ability of matter to change into new matter with different properties.

What is the evidence of Chemical Changes?

Both the shape and the chemical composition (type of matter) change.

Indicators of chemical changes:

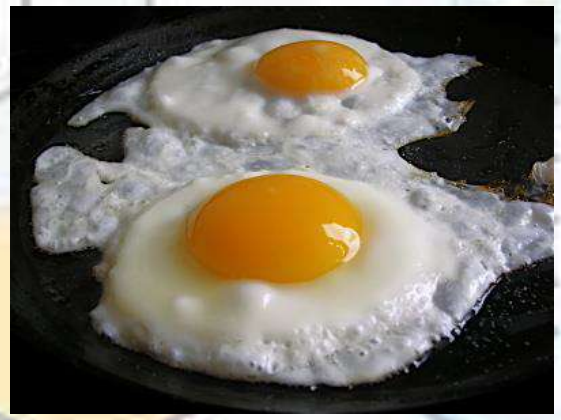
- Color changes
- Odor changes
- Light
- Heat
- Sound
- A gas or solid forms



Examples of Chemical Change

Burning Wood

Rusting iron



Cooking an egg

C You are making breakfast for your picky friend Susie. You scramble some eggs for her, but she asks if you can take them back to the kitchen and make them hard boiled.

What scientific reason can you give Susie for not changing eggs?

E

Did a chemical change or a physical change cause this can to change?

10.17.13 Foil Lab

OBJ: We will identify chemical changes using evidence from our lab.

S **Is this chemical change or a physical change. <u>JUSTIFY</u> your answer.**

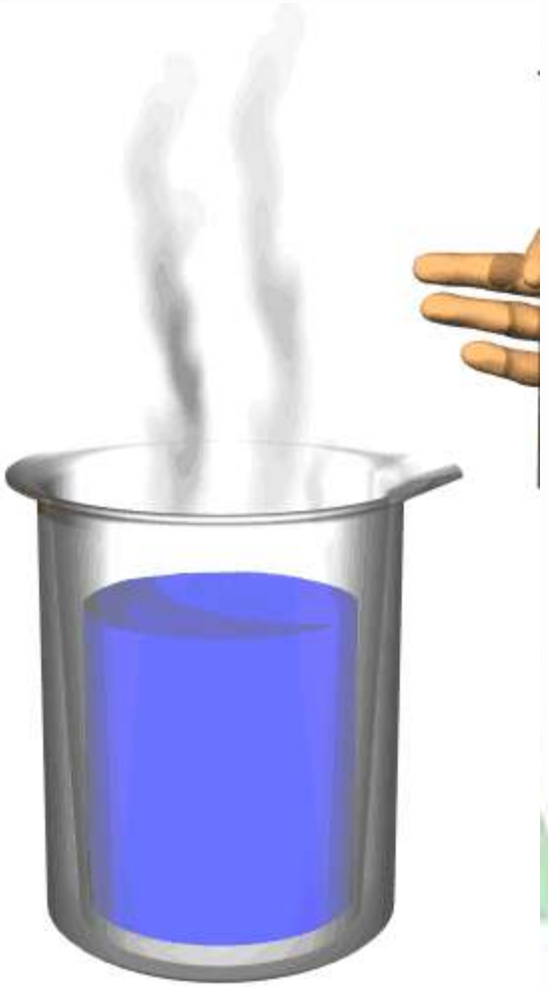


Table of Contents

P

Title: Foil Lab

Purpose: We will identify if a chemical change has occurred when we combined foil and easy off.

Research:

1. **What is a chemical property?**
2. **What is a physical property?**
3. **What evidence is there if a chemical change has occurred?**

A

Hypothesis: If we combined foil and easy off then we will see a _____ change, because we will see _____ happen.

C Procedures:

Record the physical properties you can observe about easy off and foil

	Foil	Easy off
Physical properties observation before the reaction		
Observation during the reaction		
Physical properties after the reaction		

The Scientific Method (with MR. HOMER)

Materials

What materials will we need for the experiment?

Research

Do some background research first. What do you already know?

Hypothesis

What are we going to test? What results do we expect?

Operational procedures

Step by step instructions on how to do the lab.

Measure

The actual experiment!

Evaluate

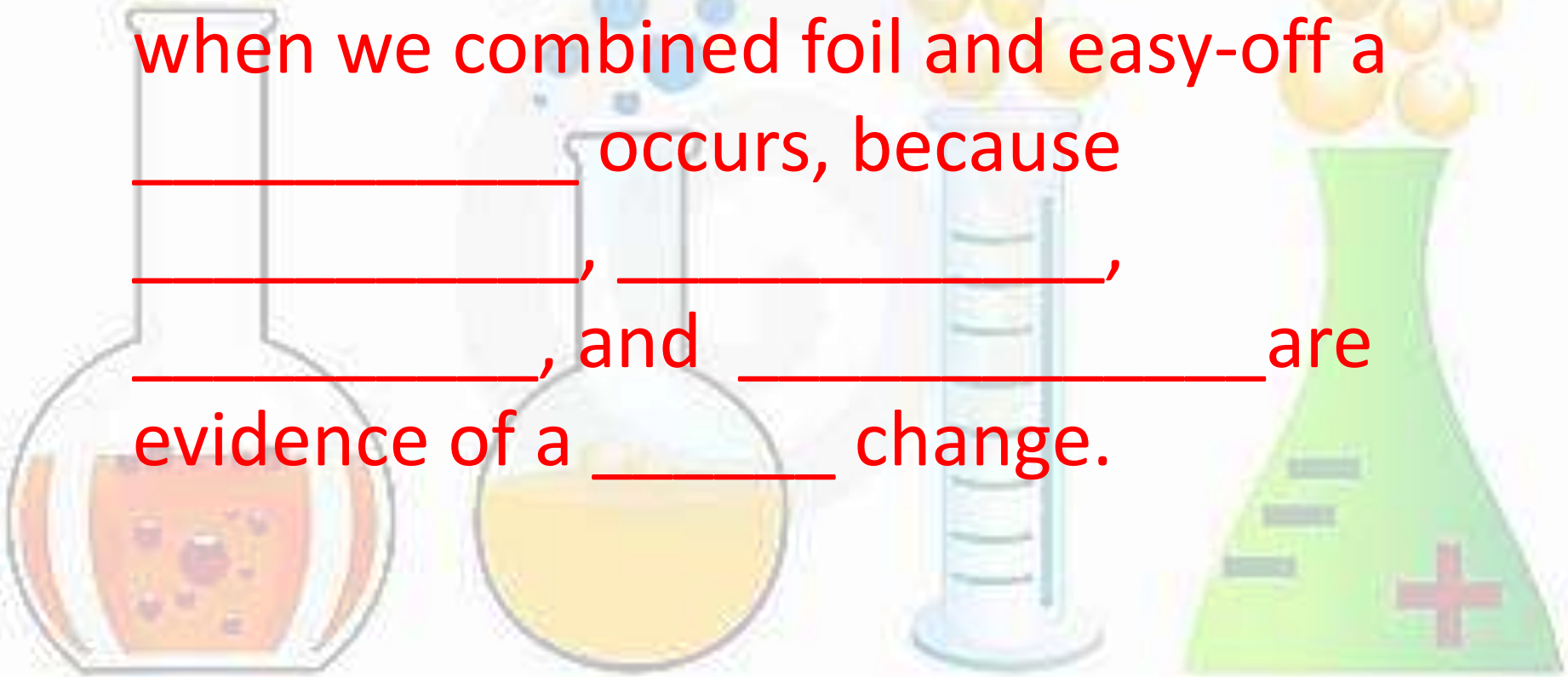
What results did we get?

Reflect

Do they validate our hypothesis? Do we need to revise it?

E Look back at your hypothesis. **EXPLAIN** if your hypothesis is valid or invalid.

Ex: My hypothesis is _____ because when we combined foil and easy-off a _____ occurs, because _____, _____, _____, and _____ are evidence of a _____ change.



10.17.13 The Milk Lab

OBJ: We will identify chemical changes using evidence from our lab.

S In this picture name one physical change and one chemical change:

Table of Contents

Date	Lecture/ Activity/ Lab	Page(s)
10/07/13	Unit 4 Vocabulary	
10/08/13	EduSmart: Elements & Compounds	
10/09/13	Element or Compound Lab	
10/10/13	Compounds Reading	
10/15/13	Physical Vs Chemical Foldable	
10/16/13	Foil Lab	
10/17/13	The Milk Lab	

P- Create a T-Chart in journal and list the following items where they belong.

Physical Change	Chemical Change

Mowing the Lawn

Fireworks

Slicing Bread

Roasting Marshmallows

Ice Melting

Glass Breaking

Baking a Cake

Rusty Nail

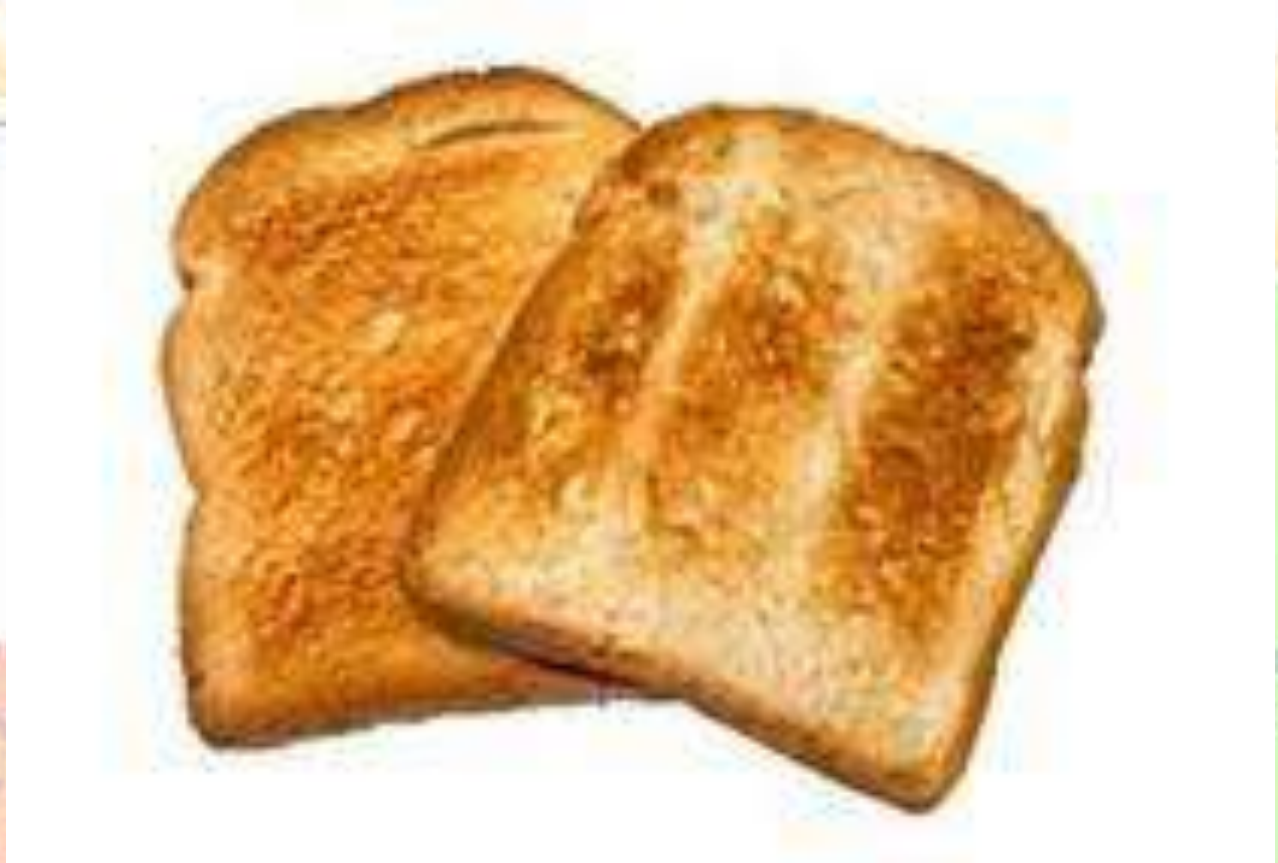
Cracking eggs

Lighting a Match

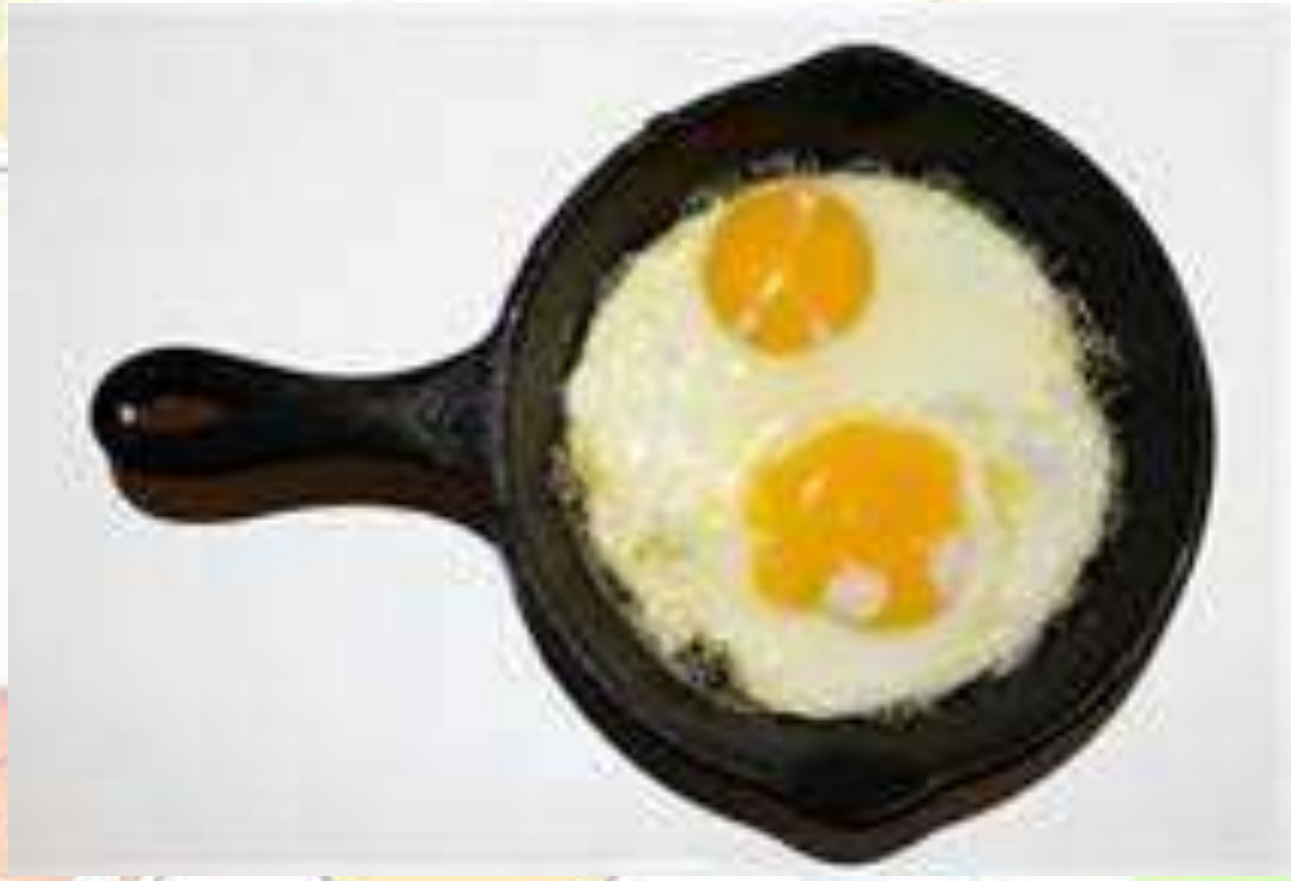
Digesting Food

Boiling Water

Toast

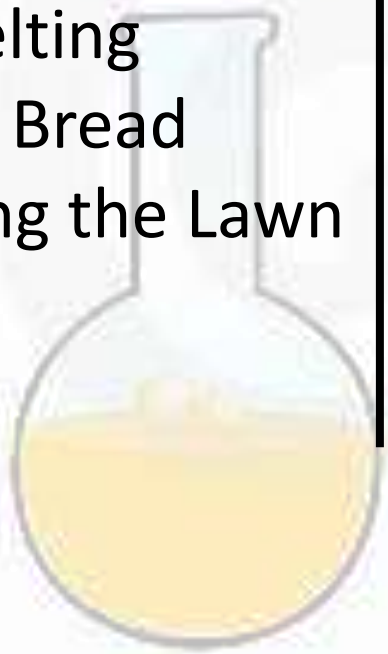


Frying Eggs



Fresh Lemonade

Physical Change	Chemical Change
Fresh Lemonade	Frying Eggs
Boling Water	Fireworks
Cracking Eggs	Toast
Glass Breaking	Digesting Food
Ice Melting	Lighting a Match
Slicing Bread	Rusting Nail
Mowing the Lawn	Baking a Cake
	Roasting Marshmallows

A

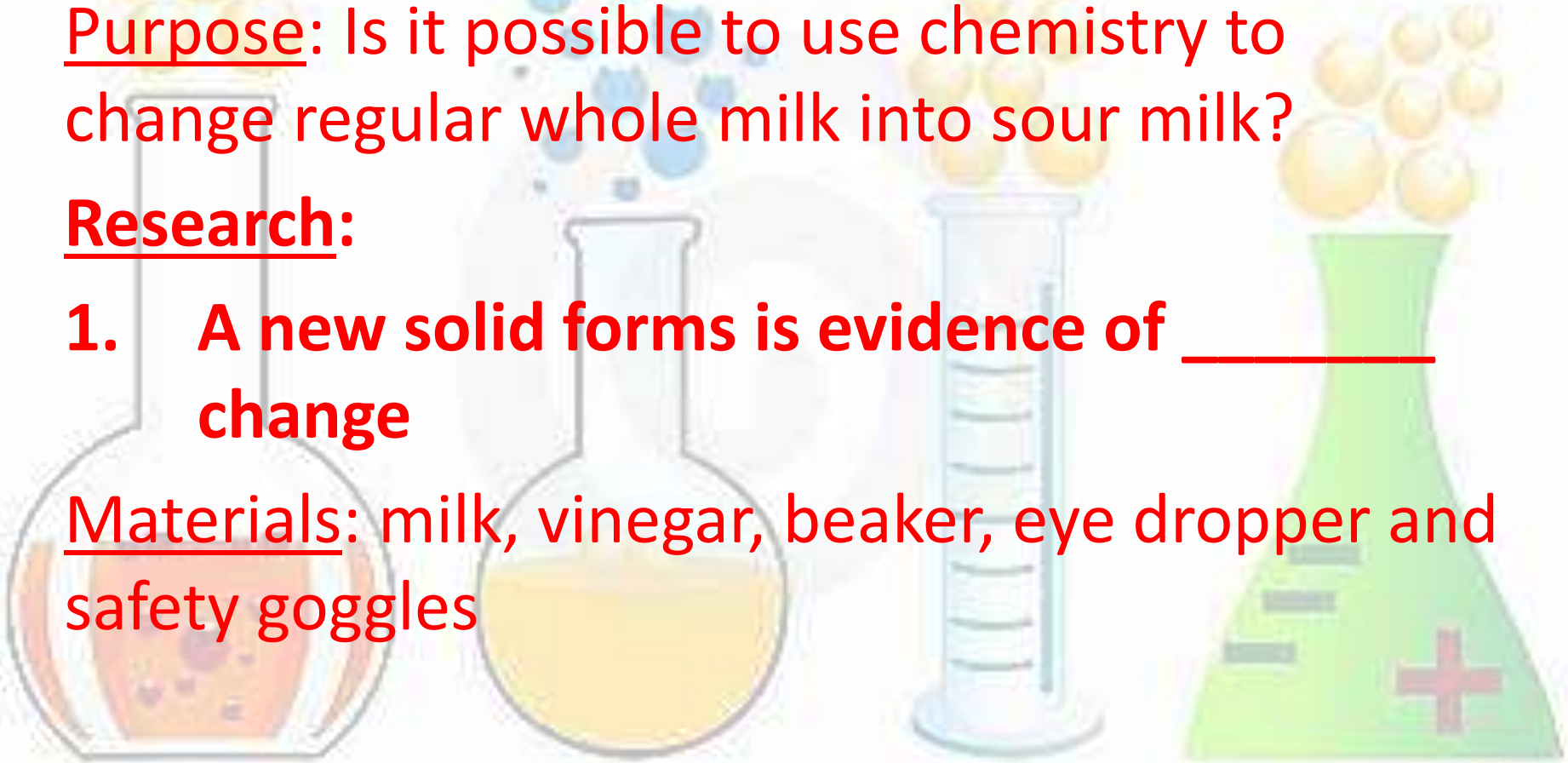
Title: Sour Milk

Purpose: Is it possible to use chemistry to change regular whole milk into sour milk?

Research:

1. **A new solid forms is evidence of _____ change**

Materials: milk, vinegar, beaker, eye dropper and safety goggles



<u>Hypothesis:</u> If we combined milk and vinegar then we will see a _____ change, because we will see _____.

The Scientific Method (with MR. HOMER)

Materials

What materials will we need for the experiment?

Research

Do some background research first. What do you already know?

Hypothesis

What are we going to test? What results do we expect?

Operational procedures

Step by step instructions on how to do the lab.

Measure

The actual experiment!

Evaluate

What results did we get?

Reflect

Do they validate our hypothesis? Do we need to revise it?

Lab Procedure

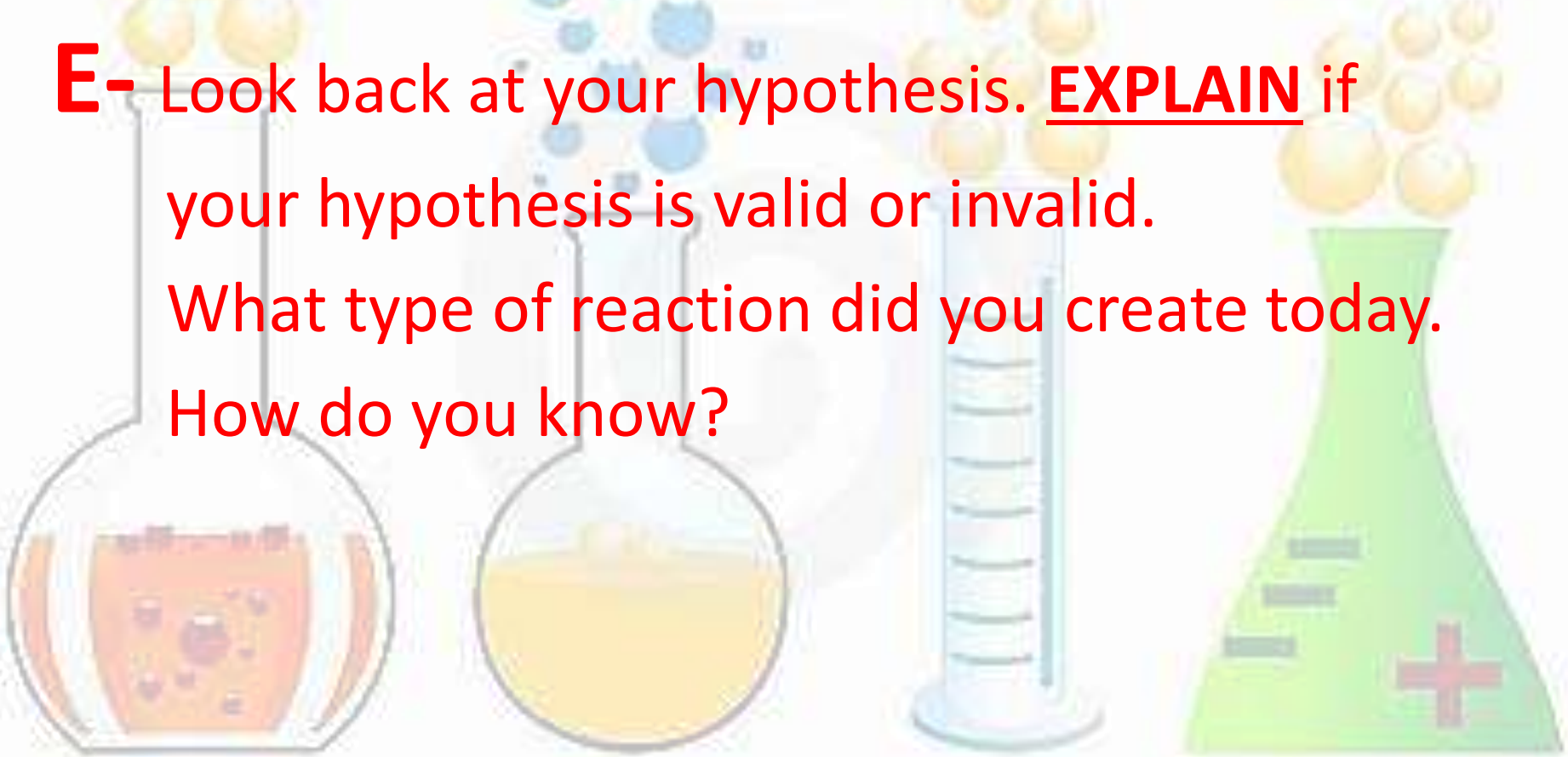
- **Milk and Vinegar**
  - **Add 30 drops of milk in the cup.**
  - **Add 35 drops of vinegar.**
- **Wait about 1 – 2 minutes.**

C- Write and draw what you see.

E- Look back at your hypothesis. **EXPLAIN** if your hypothesis is valid or invalid.

What type of reaction did you create today.

How do you know?



Venn Diagram: Elements and Compounds

10.18.13

S

What happens to an element when it becomes part of a compound?

Table of Contents

Date	Lecture/ Activity/ Lab	Page(s)
10/07/13	Unit 4 Vocabulary	
10/08/13	EduSmart: Elements & Compounds	
10/09/13	Element or Compound Lab	
10/10/13	Compounds Reading	
10/15/13	Physical Vs Chemical Foldable	
10/16/13	Foil Lab	
10/17/13	The Milk Lab	
10/18/13	Venn Diagram: Elements and Compounds	

P

Science Starters

Table Teasers

Challenge #1

Image made with http://www.wordle.net/ T. Trimpe 2008 http://sciencespot.net/

What is it? Rearrange the symbols for the elements and use the clues provided to figure out the words.

Example: Something to follow Thorium + Protactinium

Th + Pa

PATH

1. You'll want to be first!
Cerium + Radium

2. Masked bandit
Nitrogen + Cobalt + Radium + Oxygen

3. Not anybody
Oxygen + Boron + Dysprosium + Nitrogen + Oxygen

4. Beware of this snake!
Oxygen + Carbon + Boron + Radium

The answers are …

1. You'll want to be first!
Cerium + Radium

Ce + Ra **RACE**

2. Masked bandit
Nitrogen + Cobalt + Radium + Oxygen

N + Co + Ra + O

RACOON

3. Not anybody
Oxygen + Boron + Dysprosium + Nitrogen + Oxygen

O + B + Dy + N + O

NOBODY

4. Beware of this snake!
Oxygen + Carbon + Boron + Radium

O + C + B + Ra **COBRA**

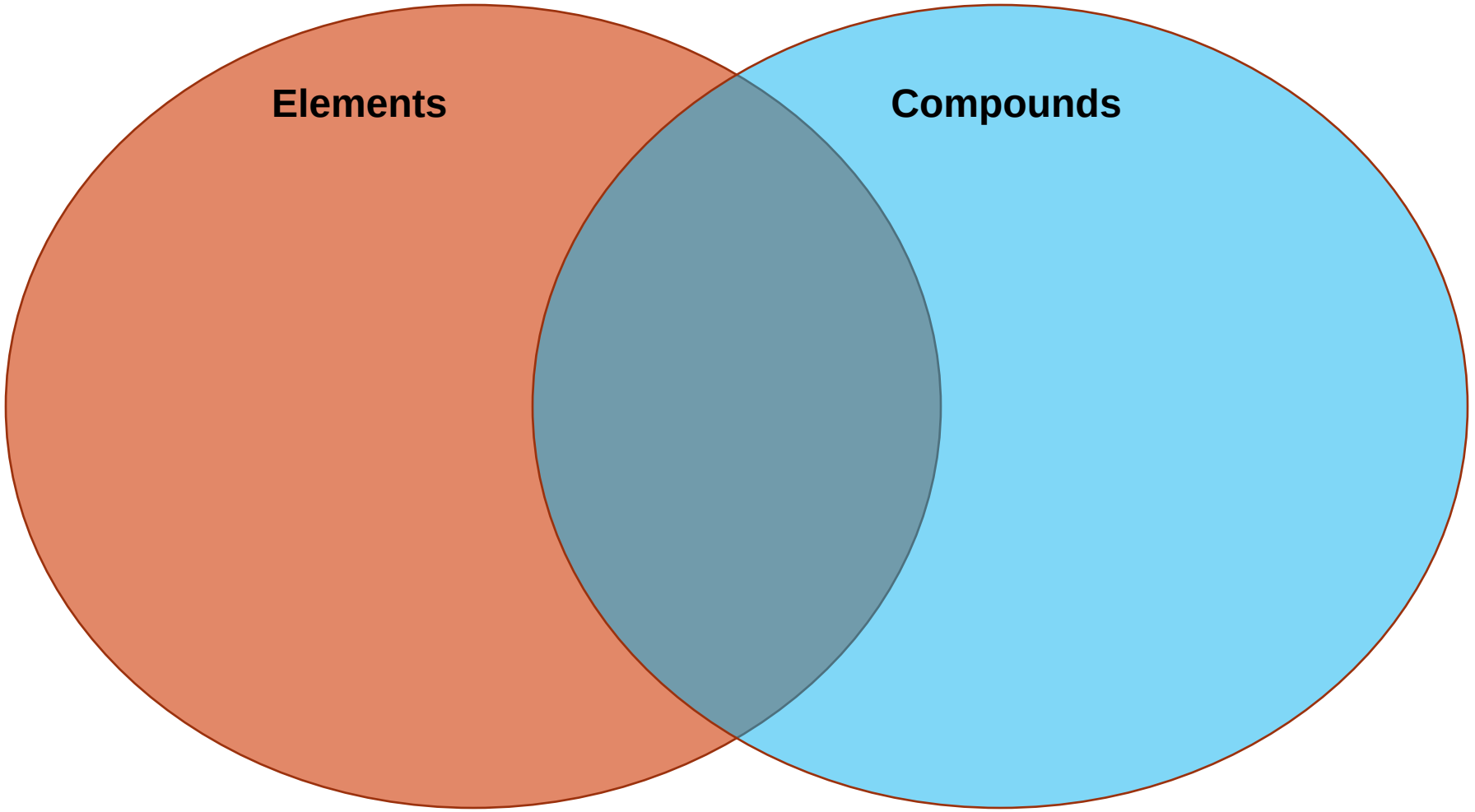
A Quick Lab: Lab Procedures

One liquid is water and one is hydrogen peroxide. If you are familiar with peroxide, you will know that it will bubble if placed on a cut. Water will not. It is not proper lab procedure to experiment on your body. You may not taste or place the liquids on your skin. You may not experiment on any person.

You have 3 minutes to try to figure out a way to tell these liquids apart.

Write what procedure you used to identify each.

C Create Venn Diagram in Journal



Using your notes…
Place each in appropriate spot on diagram

- Made from just one element
- Made from more than one element
- Formed through a chemical reaction
- Found on periodic table
- Essential for life
- Found on Earth

E

- Physical or Chemical change? Explain.

1. A tire is inflated with air.

2. Eggs turn into an omelet.