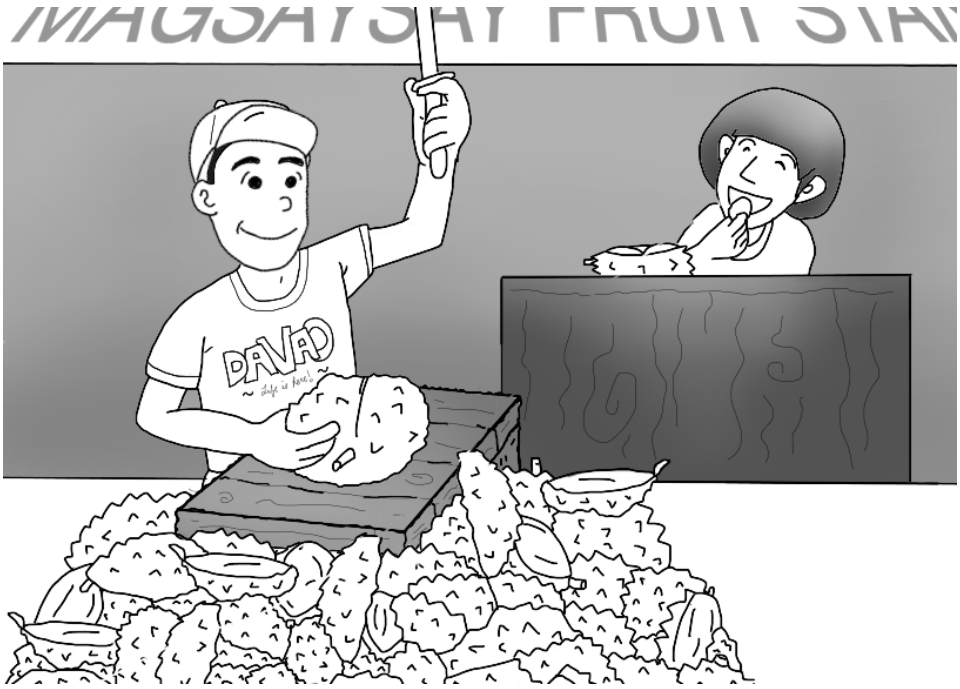
Section 1 – Doing Experiments in the Kitchen (Changes in Matter)

ENGAGE
What do you see?



by Le Grande Dolino

What do you think?

Change happens all the time, but not all types of change are the same. Do you know the differences between physical change and chemical change? How can we tell them apart?

Imagine two wooden matches. One is broken in half and the other is lit on fire. For both matches, matter has changed.

- **Which match has undergone a physical change? Which has undergone a chemical change? Give specific reasons to support your answer. How did you make your decision?**

The *What Do You Think?* Questions are meant to get you thinking about what you already know or think you know. Do not worry about being right or wrong. Discussing what you think you know is an important step in learning.

Record your ideas about these questions in your Science Notebook. Be prepared to discuss your responses with your group and the class.

Explore/Investigate

Before you begin this **Investigate**, copy the following **Data Table** to organize your science notebook. You will record what you did and what you observed.

Data Table

Action Done	Observation	Indicator of change	Kind of change
Butter/Margarine			
Left alone			
On frying pan, heated for 5 min			
Ice cubes			
left alone			
On frying pan, heated for 5 min			
Paper			
cut with scissors			
set on fire			
Candle			
unlit			
lit			
Vinegar and eggshell			
Vinegar and milk			

What you will need: butter/margarine, saucer, frying pan, candle, matchstick, paper, scissors, ice, vinegar, eggshell, calamansi, milk, sugar

1. Here are nine opportunities for you to observe changes in matter. Use only small amounts of the materials as you go along the instructions. Don't be wasteful! Ask for help from an adult.

Important: If you do not have an adult to help you, do not do **a**, **c**, **e** and **g** by yourself even if you think you can do them by yourself. Your teacher will understand.

a) Divide the small piece of butter/margarine into two. Put one half on a saucer (or *platito*) and leave it on a table. **Ask an adult** to heat the other half in a frying pan (or *kawali*) over low fire for 5 minutes. Observe what happens.

b) Place some ice cubes in a frying pan but do not do anything else. Observe what changes happen to the ice.

c) Clean the pan and place more ice cubes in a frying pan. **Ask an adult** to heat the pan over low fire for 5 minutes. Observe what happens.

d) Cut the paper with the scissors. You can also just use your hands. Observe what happens.

e) **Ask an adult** to set a piece of paper on fire. Observe what happens.

f) Add a teaspoon of sugar to a cup of water and stir. Observe what happens.

g) Ask an adult to light a candle. Observe what happens to the wick (or the rope) and the wax.

h) Add a few drops of vinegar to a small a piece of chalk or eggshell.

i) Add a few drops of calamansi juice to a small amount of milk.

2) Make as many observations as you can and write them down in your data table.

3) Look at your observation notes in your **Data Table** and identify whether the change was physical or chemical. A *physical change* involves changes in the shape or form (solid, liquid, gas) of matter, but it does not create new substances or things. A *chemical change* involves the creation of new things. Chemical changes can be described by a number of things you can observe, such as a change in color, taste or smell.

After you are done with your experiments and observations, throw away all the trash and clean up all used materials. Make sure the adult that helped you put out the flame you used for this activity.

Video Time (3:50 min): https://youtu.be/37pir0ej_SE

What did you find out?

Write these questions and answer them in your science notebook.

1. What different changes have you observed in each material?
2. What happened to the butter/margarine and ice when left alone?
3. What happened to the materials when heat was applied?
4. When do you think materials change chemically?
5. What are the evidences of chemical change?
6. What conclusion can you make from your investigation and observations? Write no less than five sentences for your conclusion.

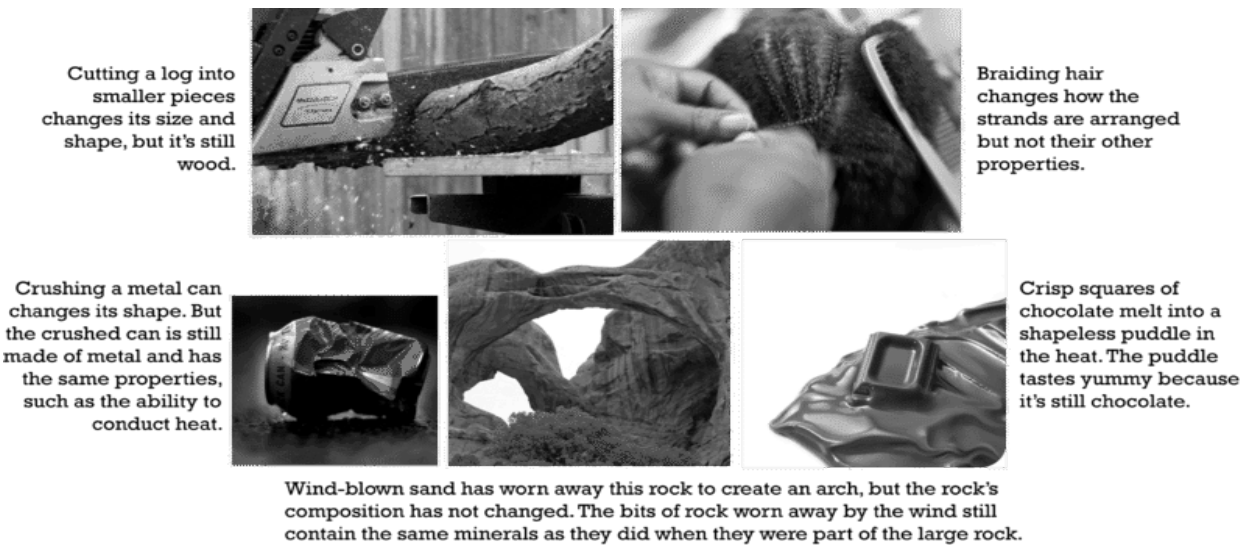
Physical and Chemical Changes in the Kitchen

In the **Investigate**, you explored examples of physical and chemical changes in the kitchen. Physical changes come in many forms. They can be a change in the shape or appearance of an object, like cutting a piece of cloth, bending a wire, or mixing salt in water.

Physical changes also happen when matter changes states.

There are three common states of matter: solid, liquid, and gas. When an ice cream popsicle turns into liquid, this is an example of a change of state called melting. Freezing, evaporation and boiling are also physical changes. Even if the ice cream melted, it is still ice cream and it can be frozen again into solid.

More examples of a physical change are shown in the next figure. In each example, matter may look different after the change occurred, but it's still the same.



Chemical changes make new substances or materials.

Any time a new substance is made, a chemical change takes place. Usually, two or more materials are combined and a new substance is formed. Some chemical changes are a little more difficult to see. An example of a chemical change is when a nail becomes covered in rust.

If you notice bubbles formed, or the temperature or color changed, there is a good chance that a chemical change has taken place. Since chemical changes make new things, most of them cannot be undone. For example, when you burn a matchstick, you can't really turn it back.

Video Time (5:23 min): https://youtu.be/x49BtB5dOwg

What Do You Think Now?

At the beginning of the section you were asked to think about the following question:

- **Which match has undergone a physical change? Which has undergone a chemical change? Give specific reasons to support your answer. How did you make your decision?**

At this point, reflect on what you think now. Do you have a better understanding of physical change and chemical change? Would you be able to classify some examples of physical and chemical change?

Identifying Physical and Chemical Changes

Can you recognize the chemical and physical changes that happen all around us? If you change the way something looks, but haven't made a new substance or material, a physical change (P) has occurred. If the substance has been changes into another substance, a chemical change (C) has occurred.

1.		A match burns
2.		An ice cube melts
3.		A teaspoon of sugar dissolves in coffee
4.		A piece of nail changes color as it rusts
5.		Water in a pot boils
6.		An egg is hard-boiled
7.		A t-shirt is cut into two pieces
8.		A damp towel dries under the sun
9.		A banana ripens.
10.		An eggshell is dipped into vinegar