GRADE 1V

CHANGES IN OBJECTS WHEN HEATED

At the end of the module, you should be able to:

- *Describe the change in an object before, during, and after heating*
- *Practice safe ways of handling hot objects and flammable materials*

Try to Recall

Arrange the jumbled letters to form the word described. Write the answer in your notebook.

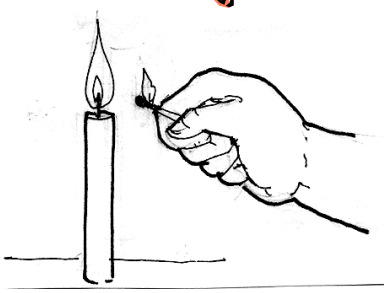
1. NUS – the earth's main source of heat
2. DKNGILIN TUREIPAEREM – the temperature at which a material starts to burn
3. TREMPAUTERE – It is the measure of how hot an object is
4. EIRE – One of man's mean source of heat for cooking
5. NOITCEV NOC – It is a method of heat transfer in liquids and gases

Explore

Do you know that some objects change when they are heated? Discover these changes as you carry out the following activities.

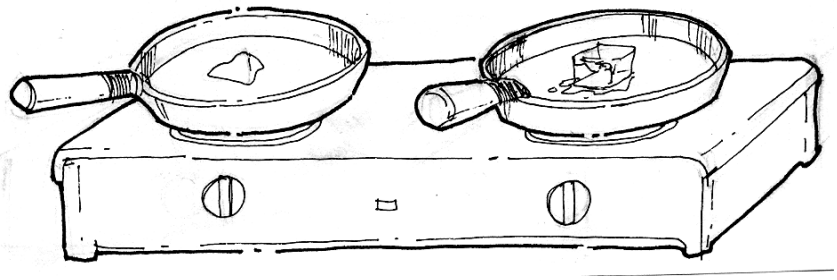
ACTIVITY 1

1. **Light a candle.**
2. **Observe what happens after one minute.**



ACTIVITY 2

1. **Ask the help of your mother or older sister or brother in doing the activity**
2. **Put a small piece of floor wax or candle wax in one pan. Put an ice cube in the other pan. Heat both pans over slow fire. Observe what happens.**



3. Answer the following questions. Write the anwers in your notebook.

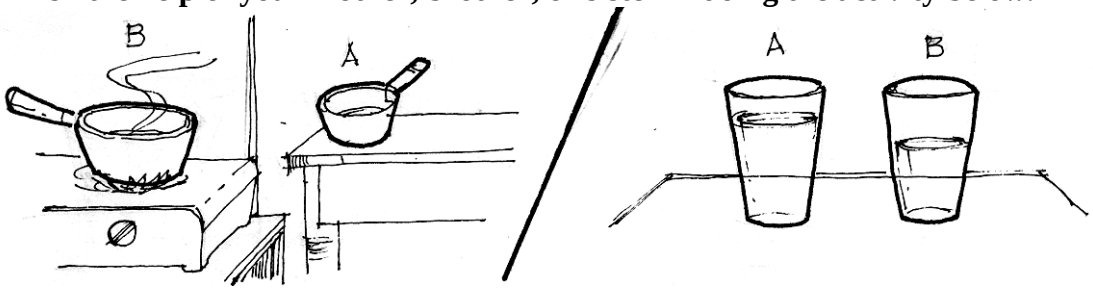
a. **What changes happened to the piece of wax and the ice cube?**
b. **What caused them these changes?**
c. **The small piece of wax and ice cube became smaller after being heated. Why do you think?**

ACTIVITY 3

- **We feel the heat of the sun especially during summer. Our skin could be wet with perspiration. However, even without being wiped, our skin becomes dry after some time. Where do you think does our perspiration go?**

ACTIVITY 4

Ask the help of your mother, brother, or sister in doing the activity below.



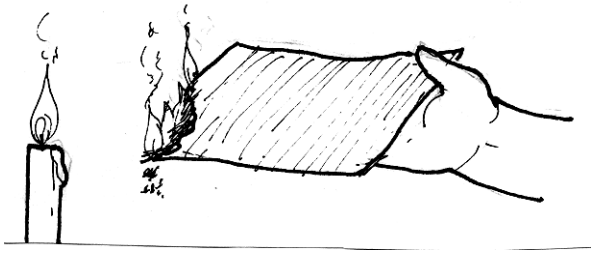
I. Pour one glass of water in each pan.

II. Set aside one pan and place on top of the table while the other pan is placed on the stove and let the water boil. Then, let it cool, and pour back into the glass.

1. **Which glass has less water? Why?**
2. **Where did the water go?**

ACTIVITY 5

Prepare a piece of paper, and a lighted candle.

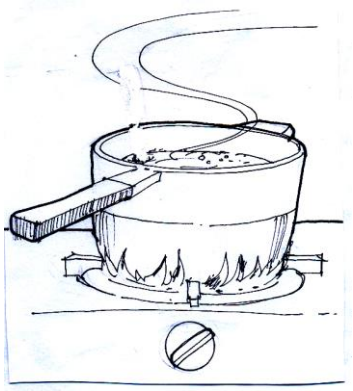


- **Burn a piece of paper. Observe what takes place as the paper burns. But, be careful not to touch the fire.**
- **What remains after the paper has burned up? Can the ashes be changed back to a paper again? Why?**

ACTIVITY 6

Ask the help of your mother, brother or sister in doing the activity.

1. **Boil some water in a pan.**
2. **Get the temperature of the boiling water.**
3. **As it boils, observe the steam coming out.**
4. **Answer the following questions. Write the answers in your notebook.**
   a. What did you observe from the boiling water? Is it hot?
   b. Is it safe to touch the boiling water with our bare hands? Why?



- **Read and Learn More:**

When a candle is heated, it melts. When cooled, it becomes solid again. A heated candle changes from solid to liquid. When cooled, it changes from liquid to solid. Some materials solidify when cooled and some materials liquify when heated. Examples are the candle, wax and ice cube in your experiment.

When water is heated, some of it changes to water vapor. Water vapor is water in the form of gas. Water vapor contains the materials present in water. The change from water to gas is called **physical change**. Just like the wax in the experiment, it melts when heated but it turns to wax again when cooled. In a physical change, the material can be brought back to its original form.

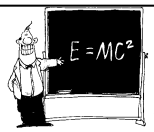
The piece of paper becomes black when it is burned. Then it turns into ashes. Ashes cannot be changed into paper again. The materials of which ashes are made are not the same as the materials in the paper. A new material is formed when a piece of paper is burned. This is called a **chemical change**.

Heat can make a material change into other materials. Physical and chemical changes of matter happens everyday. There are things that need to be changed physically so that we can use them. Chemical change is needed to happen to some objects so that they can be made. Can you name some materials that undergo changes physically or chemically?

Water expands when heated. Continuous heating will make the water level go higher until it reaches its boiling point. The boiling point of water is 100°C. We must be careful in handling boiling water. Try to do the following:

- Always use safety holder in transporting hot water.
- Don't touch boiling water with bare hands.
- As much as possible, stay away from boiling water.
- Treat scald properly. A scald is a burn caused by contact with hot liquid.

We must be careful with heated air, too. Air expands. When heated in a balloon, it stretches the balloon and makes it larger. Balloons and tires should not be overheated. They will explode when they reach their elastic limit. Other materials and fuels like gasoline, kerosene, charcoal, liquefied gas, and thinner should be kept in safe place because these are high-combustible materials.



I learned that:

- Some materials solidify when cooled and some materials liquefy when heated.
- The heat during boiling changed the liquid water into gaseous water vapor and turns back to liquid water when it is cooled. This is called a physical change. The candle wax in the experiment also undergone physical change. It melts when heated but it turns to wax again when cooled.
- The piece of paper change in texture, color appearance and composition when it is burned. This shows that the substances in the paper changed. This process is called a **chemical change.**

Apply It

Answer the following questions. Write the answers in your notebook.

1. Why should you not leave water boiling for a long time?
2. When cooking oil has solidified, what can you do to that it will flow more smoothly?
3. If you want wet clothes to dry quickly, where should you hang them? Why?
4. How can you make floor wax using kerosene?

Test Yourself

Answer the following questions. Write the answers in your notebook.

1. Under what condition will a candle melt?
    a. when it is cooled
    b. when it is inside a bottle
    c. when it is heated
    d. when it is in the freezer

2. Which object is not a source of heat energy?
    a. sun
    b. lighted candle
    c. water
    d. burning paper

3. What happens to water when heated? It…
    a. changes to air
    b. changes to water vapor
    c. friction it solidifies
    d. changes to liquid again

4. What will happen to an object that is placed under the sunlight?
    a. Its temperature will disappear.
    b. Its temperature will not change.
    c. Its temperature will increase.
    d. The temperature remains the same

5. Which of the following shows an effect of heat?
    a. heat changes gas to liquid
    b. heat changes liquid to gas
    c. heat causes water to expand
    d. heat causes water to contrast