CHAPTER 6: CHANGES AROUND US

GET READY!

1. Seed, plant
2. State of matter
3. Yes. Water cycle
4. Both are physical changes.
5. Picture A- No. A plant cannot be converted back to a seed.
   Picture B- Yes. Water vapour can be condensed again to form water and can then be converted to ice.

PRACTICE TIME 1

1. F. Moon changes its shape every day.
2. T
3. F. Dissolving sugar in water is a reversible change.
4. T
5. T

PRACTICE TIME 2

1. shape, size
2. physical
3. temporary, reversible
4. chemical
5. expand

EXERCISE

A. 1. a. Melting of an ice cream
2. d. Breaking an egg
3. b. chemical change
4. a. The molecules of the substance change.
5. c. Sometimes reversible
6. b. Chemical change
7. b. allow for expansion
8. c. Evaporation of water

B. 1. reversible 2. irreversible 3. physical 4. different
5. chemical 6. contracts 7. opens 8. expansion

C. 1. T
2. F. Ripening of fruits is an irreversible change.
3. F. Tearing of paper is a physical and irreversible change.
4. T
5. F. Objects expand on heating.
6. T
7. T
8. F. Electric wires should be kept loose always.

D. 1. tearing of paper
2. rusting
3. breaking of a glass
4. baking cookies
5. curdling of milk

E. 1. Dissolving sugar in water ; dissolving salt in water

2. Cooking food ; burning of candle

3. Burning of candle ; burning of wood

4. Melting of wax ; stretching of rubber

F. I. 1. A process in which a brown substance is formed on an iron material when it comes in contact with water and air.

2. The substances that react with each other during a chemical reaction.

3. The substances that are formed during a chemical reaction.

4. The gaps kept between two adjoining metal rails in the railway tracks are called expansion gaps.

5. Changing of states of matter, i.e., solid, liquid and gas, from one state to another is called interchange of state.

II. 1. a. Melting of butter is a physical and reversible change.

b. Stretching of a rubber band is physical and reversible change.

2. Burning of candle

3. Ice (solid), water (liquid) and water vapour (gas)

4. Heating

G. 1. Physical changes are usually reversible. For example, stretching of rubber. But in some cases they cannot be reversed. For example, if we cut a wooden log we get smaller pieces of wood. Only the shape and size of the wooden pieces change. But the pieces of wood cannot be joined again to form wood. Hence it is irreversible physical change.

2. Burning of wood is chemical change. When it burns a new substance, i.e., CO_2 is formed.

3.

Physical change	Chemical change
1. No new substance is formed.	1. A new substance is formed.
2. The molecules of the substance remain the same after the change.	2. The molecules of the substance change to form a new substance.
3. These changes may be reversible or irreversible in nature.	3. These changes are irreversible in nature.
4. These changes may be temporary or permanent.	4. These changes are permanent.
5. The energy required for these changes to take place is very small or negligible.	5. These changes require substantial energy.

4. a. physical, it solidifies as soon as it cools.

b. physical, the material of the cloth does not change.

5. In summer, overhead electric wires expand and in winters, overhead electric wires contract.

6. The mercury inside the glass tube of the thermometer expands when it gets heated. We then take reading of temperature of body by observing the rise of mercury in the glass tube.

H. 1. Heat and light are given off when a candle burns. The heat from the flame melts the wax. This molten wax solidifies as soon as it cools. The melting of wax in the candle and its solidification is a physical change. During the melting and solidification of the wax, only the shape and state of wax changes. There is no change in the chemical composition of solid and molten wax.

During the burning of the candle, molten wax moves up the wick. This molten wax from the candle burns through the wick giving out heat and light. In the process, new substances such as soot, water and carbon dioxide are formed. The size of the candle also shortens on burning. Therefore, burning of a candle is a chemical change.

2. a. A balloon is inflated by blowing air into it.

Inflation of balloon is a reversible change because it comes back to the original shape when it is deflated.

b. A balloon bursts when inflating it.

When we burst a balloon, we cannot bring back the inflated balloon again, hence it is an irreversible change.

3. During chemical (irreversible) changes, the molecules that make up the substance undergo change. This leads to the formation of a new substance with a changed internal structure and composition.

4. Changes in which a new substance is formed are called chemical changes. New substances formed in a chemical change and have different properties. Therefore, the new substance formed is different from the previous one. Burning of paper and wood and respiration are examples of chemical changes.

5. Two examples of situations where contraction and expansion of materials play an important role are as follows.

- Expansion of metals on heating helps to fix the metal rim on a wooden wheel. On heating, the metallic rim expands. This expanded hot metallic ring is then put around the circular wheel. Then, cold water is poured over it. Cold water lowers the temperature of the rim and thus, it contracts and fits tightly over the wooden wheel. Earlier, this type of wheel was commonly used in carts.
- The lids of jars can be easily opened by placing them under hot water. Actually, the lids expand on heating and become loose, so open up easily.

THINK AND ANSWER

1. Plant more trees.

2. No, both the processes are different. Heating water to produce a gas (water vapour) is a physical change whereas passing electricity through water to produce hydrogen and oxygen gases is a chemical change.

3. To be done by the students.

DISCUSS

1. No, the change cannot be reversed because the cement will be hardened as a chemical change would have taken place.

2. We can get sugar and salt back by the process of evaporation where the solution is heated. Water evaporates and sugar or salt is left as residue.

FUN ACTIVITIES

1. Irreversible, physical
2. Both physical and chemical
3. Chemical
4. Reversible, physical

VALUE FOR LIFE

1. Physical change
2. Chemical change
3. Physical change

She would have kept food inside the refrigerator.

To be done by the students.

SUBJECT CONNECT • English

Seed into plant ✓ Small nose to long nose ✗ Short hair to long hair ✓

Frog into prince ✗ Half-moon to full moon ✓ Broken egg into whole egg ✗

PROJECTS AND ACTIVITIES • Skills assessed: Collaborating, Communicatin Critical Thinking

1. To be done by the students.
2. To be done by the students.
3. Craft activity which is reversible physical change: Origami bird making
   Craft activity which is irreversible physical change: Paper quilling
4. To be done by the students.

WORKSHEET 1 Chapter 6: CHANGES AROUND US

Name: ..... Class: .....

Date: ..... Teacher's Signature: .....

A. Tick (✓) the correct answer.

1. Preparing curd from milk is an example of .....

   a. reversible changes ◯ b. irreversible changes ◯

   c. both of these ◯ d. none of these ◯

2. Which of these are physical changes?

   a. Freezing ◯ b. Melting ◯

   c. Tearing ◯ d. All of these ◯

3. Rusting is a .....

   a. physical change ◯ b. chemical change ◯

   c. both of these ◯ d. none of these ◯

4. Burning of wood is an example of .....

   a. physical change ◯ b. chemical change ◯

   c. both of these ◯ d. none of these ◯

5. Electric wires hanging between the poles are kept a little loose for ..... during winter.

   a. contraction ◯ b. expansion ◯

   c. both contraction and expansion ◯ d. neither contraction nor expansion ◯

B. Write T for True and F for False.

1. All physical changes are reversible. ◯
2. The moon changes its shape once every month. ◯
3. Dissolving sugar or salt in water and making a solution is also an example of a reversible change. ◯

4. A new substance is formed in chemical changes.

5. Gaps are kept between two adjoining metal rails in the railway tracks for contraction.

C. Fill in the blanks.

1. Changing of water from one state to another is a ..... change.
2. In ..... change, the internal structure or the molecules that make up the substance do not change.
3. Physical changes such as tearing of paper, cutting of wood and breaking of glass are .....
4. When any object made of iron combines with ..... and moisture, rusting occurs.
5. You must have seen gaps kept between two adjoining metal rails in the railway tracks. These are called .....

D. Match the following.

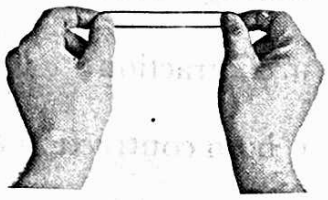
1. Reversible changes	a. Melting of butter
2. Irreversible changes	b. Rusting of iron nails
3. Physical changes	c. Gaps kept between two adjoining metal rails in the railway tracks
4. Chemical changes	d. Dissolving sugar in water
5. Expansion gaps	e. Bursting of a balloon.

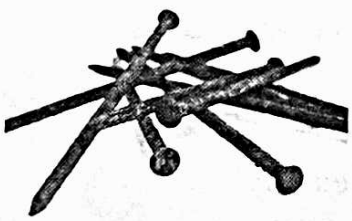
E. Picture-based question.

Identify the following pictures as physical or chemical change.

1. 

2. 

3. 

4. 

5. 

WORKSHEET 2 Chapter 6: CHANGES AROUND US

Name: ..... Class: .....

Date: ..... Teacher's Signature: .....

A. Tick (✓) the correct answer.

1. Dissolving sugar or salt in water is an example of .....

   a. reversible changes ○ b. irreversible changes ○

   c. both of these ○ d. none of these ○

2. Which of the following is/are chemical change(s)?

   a. Rusting ○ b. Burning of paper ○

   c. Breakdown of food ○ d. All of these ○

3. When any object made of iron combines with ....., rusting occurs.

   a. oxygen ○ b. moisture ○

   c. both a and b ○ d. none of these ○

4. Chemical changes are ..... in nature.

   a. reversible ○ b. irreversible ○

   c. both a and b ○ d. none of these ○

5. Gaps are kept between two adjoining metal rails in the railway tracks during summer.

   a. contraction ○ b. expansion ○

   c. both contraction and expansion ○ d. neither contraction nor expansion ○

B. Write T for True and F for False.

1. Dissolving sugar or salt in water and making a solution is an irreversible ○
2. In physical changes, the internal structure or the molecules that make up ○ do not change.
3. Tearing a paper into small pieces is a chemical change. ○

4. The energy required for a physical change to take place is very small or negligible as compared to the chemical changes.

5. Chemical changes result due to reaction between reactants to form products.

C. Fill in the blanks.

1. Changes can be ..... or .....
2. Changes in which no new substances are formed are called ..... changes.
3. ..... do not change the molecular structure of a substance.
4. The substances that react with each other are called .....
5. ..... changes are permanent and irreversible.

D. Match the following.

1. Reversible changes	a. Substances react with each other during a chemical reaction
2. Irreversible changes	b. No new substance is formed
3. Physical changes	c. Changes which can be reversed
4. Chemical changes	d. Changes which cannot be reversed
5. Reactants	e. New substance is formed

E. Give two examples of each of the following.

1. Physical change
2. Reversible change
3. Irreversible change
4. Chemical change

F. Answer the following.

1. What is the difference between reversible changes and irreversible changes?
2. What are physical changes? Name any two process of physical changes.
3. Write any three characteristics of physical changes.
4. What is rusting?
5. Write any three characteristics of chemical changes.
6. Why are gaps kept between two adjoining metal rails in the railway tracks?
7. Why electric wires hanging between the poles are kept a little loose?
8. How is burning of a candle a chemical change?