

CBSE Class 6 Science Notes Chapter 6 – Changes Around Us PDF, Important Topics & Questions

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CBSE Class 6 Science Notes Chapter 6 Overview

When we look around us, it's easy to see that everything is constantly changing. The leaves on the trees change color in autumn, the moon goes through different phases each month, and even our own bodies grow and develop as we age.

These changes are an essential part of life and understanding them is crucial for developing a deeper understanding of the world around us. That's where CBSE Class 6 Science Notes Chapter 6 comes in – this chapter explores various types of changes that occur around us every day and their causes.

CBSE Class 6 Science Notes Chapter 6 – Changes Around Us Notes

The study of changes around us provides insights into the behavior of matter and the transformations it undergoes. By understanding the difference between physical and chemical changes, as well as their properties and consequences, we can better comprehend the world around us and apply this knowledge in various fields of science and everyday life.

1) Reversible change:

A reversible change is one that can be reversed by one or more methods. In reversible changes, there is typically a change in the physical properties, shape, or size of the material, but a new substance is not formed. Examples of reversible changes include folding paper or elongating a spring.

2) Irreversible change:

An irreversible change is permanent and cannot be undone by any physical or chemical means. In irreversible changes, new substances are formed. For example, the burning of a candle is an irreversible change because we cannot retrieve the original candle once it has been burnt.

3) Expansion and Contraction:

Expansion and contraction occur when the temperature of a substance changes. When the temperature increases, particles in the substance expand, causing the material to expand. Conversely, when the temperature decreases, particles contract, causing the material to contract. The amount of expansion or contraction varies among solids, liquids, and gases.

4) Changes in State:

Changes in state refer to physical changes that occur when a substance transitions from one state of matter to another. Water is a prime example, existing as a solid (ice), liquid (water), or gas (water vapor) depending on temperature. Melting, evaporation, and condensation are all examples of changes in state.

5) Anomalous Expansion of Water:

Water exhibits an unusual behavior known as anomalous expansion. While most substances contract upon cooling, water contracts up to 4°C and then begins to expand as it cools further to 0°C. This unique behavior of water has significant implications for aquatic ecosystems and weather patterns.

6) Burning:

Burning is an irreversible change where a substance reacts with oxygen to produce new materials such as ash and gases. For example, when paper is burned, it produces ash, which is different from paper in appearance and properties.

7) Separation:

Separation involves the process of isolating the components of a mixture or impure substance. This process is carried out to remove unwanted or harmful components, obtain useful components, or obtain a pure sample by removing impurities.

8) Physical Change:

- A physical change is one where the substance undergoes a change in its physical state or appearance without forming a new substance.
- Examples of physical changes include changes in shape, size, texture, or state of matter (solid, liquid, gas).
- Physical changes can usually be reversed by simple physical means, such as melting, freezing, or dissolving.

- For instance, cutting paper into pieces or melting ice are examples of physical changes.

9) Chemical Change:

- A chemical change is one where the substance undergoes a change in its chemical composition, resulting in the formation of one or more new substances.
- Chemical changes are often irreversible and involve the breaking and forming of chemical bonds.
- Examples of chemical changes include burning wood (which produces ash and gases), rusting of iron (which forms iron oxide), and cooking food (which involves chemical reactions that change the composition of the ingredients).
- Chemical changes are often accompanied by changes in color, temperature, odor, or the release of gas.

10) Recognizing Changes:

- Understanding how to recognize and differentiate between physical and chemical changes is essential.
- Physical changes involve changes in physical properties without forming new substances, while chemical changes involve the formation of new substances with different chemical properties.

11) Reversibility:

- Reversible changes can be undone by physical means, while irreversible changes cannot.
- Knowing whether a change is reversible or irreversible helps in understanding its nature and consequences.

12) Conservation of Mass:

- The principle of conservation of mass states that mass is neither created nor destroyed in a chemical reaction.
- This means that the total mass of reactants in a chemical reaction is equal to the total mass of products.
- Understanding this principle helps in predicting the outcome of chemical reactions and balancing chemical equations.

13) Practical Applications:

- Understanding changes around us has practical applications in daily life, industry, and technology.
- Knowledge of physical and chemical changes helps in cooking, cleaning, manufacturing, and environmental protection.

These concepts provide a foundational understanding of the various changes that occur in the world around us, from reversible and irreversible changes to the anomalous behavior of water and the processes of burning and separation. Understanding these concepts is essential for comprehending the natural phenomena and everyday occurrences encountered in the study of science.

CBSE Class 6 Science Notes Chapter 6 Important Topics

Let's delve into each of the important topics covered in CBSE Class 6 Science Notes Chapter 6 – Changes Around Us:

1) Physical Changes:

- **Definition and Examples:** Physical changes refer to alterations in the appearance or state of matter without changing its chemical composition. Examples include changes in shape, size, texture, or state of matter (solid, liquid, gas) such as melting ice, freezing water, or tearing paper.

2) Chemical Changes:

- **Definition and Examples:** Chemical changes involve the formation of new substances with different chemical properties. Examples include burning wood to produce ash and smoke, or rusting of iron due to its reaction with oxygen and water.

3) Recognition of Changes:

- **Differentiation:** Understanding how to differentiate between physical and chemical changes based on observable characteristics. Chemical changes often involve color change, temperature change, formation of gas, or formation of a precipitate (solid formed from a chemical reaction in a liquid solution).

4) Reversibility of Changes:

- **Concept:** Reversible changes are those that can be undone by physical means, while irreversible changes cannot be undone. Examples of reversible changes include melting ice (solid to liquid) or dissolving sugar in water (solid to solution). Irreversible changes include burning wood (formation of ash) or cooking an egg (formation of a new substance).

5) Conservation of Mass:

- **Principle:** The principle of conservation of mass states that in a closed system, mass is neither created nor destroyed during a chemical reaction.

This means that the total mass of the reactants equals the total mass of the products. This principle is applied when balancing chemical equations.

6) Practical Applications:

- **Importance:** Understanding physical and chemical changes is crucial for various practical applications in daily life and industries. For example, cooking involves both physical (melting, boiling) and chemical (baking, frying) changes. Industries rely on chemical reactions for manufacturing products like food, medicines, and construction materials.

7) Anomalous Expansion of Water:

- **Explanation:** Water exhibits an unusual behavior where it contracts as it cools down until reaching 4°C, after which it expands until freezing at 0°C. This anomalous behavior is significant in preserving aquatic life during winter by allowing ice to float on water bodies.

8) Burning as an Irreversible Change:

- **Process:** Burning involves the rapid oxidation of a substance, resulting in the release of heat, light, and new substances such as ash and gases. Once burnt, the original substance cannot be recovered, making it an irreversible change.

9) Separation of Substances:

- **Methods:** Various methods are employed to separate mixtures and substances based on their physical and chemical properties. Common techniques include filtration, evaporation, distillation, chromatography, and magnetism. These techniques are used in industries for purification and recycling processes.

10) Practical Skills:

- **Development:** Through practical experiments and observations, students develop skills for identifying and classifying different types of changes. These skills are essential for understanding real-life scenarios and applying scientific knowledge to solve problems effectively.

CBSE Class 6 Science Notes Chapter 6 Important Questions

Here are some important questions from CBSE Class 6 Science Chapter 6 – Changes Around Us:

1) Define physical change. Provide examples of physical changes.

- A physical change is a change in which the substance undergoes a change in its physical state or appearance, but its chemical composition remains unchanged.
- Examples:
 - Melting of ice to form water.
 - Freezing of water to form ice.
 - Crushing a can.
- Cutting paper into pieces.

2) Distinguish between physical and chemical changes with examples.

- Physical changes involve a change in the state or appearance of a substance without altering its chemical composition, while chemical changes result in the formation of new substances with different chemical properties.
- Example of physical change: Melting of ice.
- Example of chemical change: Burning of wood.

3) Explain the process of rusting of iron. Is rusting a physical or chemical change? Justify your answer.

- Rusting of iron is the process where iron reacts with oxygen and moisture in the air to form iron oxide (rust).
- Rusting is a chemical change because it involves the formation of a new substance (iron oxide) with different chemical properties compared to iron.

4) Describe the principle of conservation of mass. How is it applied in chemical reactions?

- The principle of conservation of mass states that the total mass of substances involved in a chemical reaction remains constant before and after the reaction.
- It is applied in chemical reactions by ensuring that the total mass of reactants equals the total mass of products.

5) What is the difference between reversible and irreversible changes? Provide examples of each.

- Reversible changes are changes that can be reversed by physical means, while irreversible changes cannot be reversed.
- Example of reversible change: Melting of ice.
- Example of irreversible change: Burning of paper.

6) Discuss the practical importance of understanding physical and chemical changes in daily life.

- Understanding physical and chemical changes helps us understand various natural phenomena, such as rusting, burning, and cooking.

- It helps us make informed decisions in daily activities, such as cooking, cleaning, and handling household chemicals.

7) Explain the concept of the anomalous expansion of water. Why is it significant?

- The anomalous expansion of water refers to the fact that water expands upon freezing instead of contracting like other substances.
- This property is significant because it allows ice to float on water, preventing large bodies of water from freezing solid and preserving aquatic life.

8) Why is burning considered an irreversible change? Provide examples to support your answer.

- Burning is considered irreversible because it results in the formation of new substances (ashes and gases) that cannot be converted back into the original substance.
- Example: Burning of wood produces ashes and gases, which cannot be converted back into wood.

9) Outline the various methods used for the separation of substances. Give examples of situations where each method would be applicable.

- Methods of separation include filtration, evaporation, distillation, chromatography, and magnetism.
- Example: Filtration can be used to separate sand from water, while distillation can be used to separate salt from water.

10) How do physical and chemical changes play a role in industrial processes? Provide specific examples.

- Physical and chemical changes are integral to various industrial processes, such as refining metals, manufacturing chemicals, and producing electricity.
- Example: Electroplating involves a chemical change where a metal object is coated with a thin layer of another metal to enhance its appearance and properties.

11) Discuss the importance of understanding physical changes in everyday activities.

- Understanding physical changes is crucial in everyday activities such as cooking, cleaning, and manufacturing processes.
- For example, knowing that water boils at 100°C allows us to cook food properly, while understanding that ice melts at 0°C helps us in preserving food by freezing.

12) Explain the concept of expansion and contraction in materials. How is it relevant in practical applications?

- Expansion and contraction refer to the increase or decrease in the volume or size of a material due to changes in temperature.
- This concept is relevant in various practical applications, such as in the construction industry where materials expand and contract with temperature changes, leading to structural stability or potential damage.

13) Describe the process of chromatography and its applications.

- Chromatography is a technique used to separate and analyze mixtures of substances based on their different rates of migration through a stationary phase.
- It finds applications in various fields such as chemistry (for analyzing mixtures of compounds), forensic science (for analyzing ink or drug samples), and biology (for separating pigments in plants).

14) Explain the difference between distillation and evaporation. Provide examples of situations where each method is used.

- Distillation involves heating a mixture to separate its components based on differences in boiling points, while evaporation involves the conversion of a liquid into vapor by heating or exposure to air.
- Example: Distillation is used to separate a mixture of water and alcohol, while evaporation is used to separate salt from seawater.

15) Discuss the significance of physical and chemical changes in the environment.

- Physical and chemical changes play significant roles in the environment, such as in the water cycle (evaporation and condensation), weathering of rocks (chemical changes), and decomposition of organic matter (chemical changes).
- Understanding these processes helps in environmental conservation efforts and management of natural resources.

16) Explain the role of physical and chemical changes in the food industry.

- Physical changes, such as grinding, mixing, and heating, are essential in food preparation and processing.
- Chemical changes, such as fermentation, cooking, and baking, are involved in food preservation, flavor development, and texture enhancement.

17) Describe the practical applications of reversible changes in everyday life.

- Reversible changes have practical applications in various aspects of daily life, such as in cooking (melting and freezing of ingredients), heating and cooling systems (expansion and contraction of materials), and manufacturing processes (forming and shaping of materials).

18) Explain how the separation of substances is essential in various industries.

- The separation of substances is crucial in industries such as pharmaceuticals (purification of drugs), petrochemicals (refining of crude oil), and wastewater treatment (removal of pollutants).
- These processes help in obtaining pure substances for further processing and ensure product quality and safety.

CBSE Class 6 Science Notes Chapter 6 PDF

The fundamentals of physics are crucial for understanding the world around us. This chapter has provided a comprehensive overview of various concepts such as motion, displacement, speed and velocity. With these notes in hand, students can easily grasp the basics and build a strong foundation for their future studies.

However, if you encounter any difficulties or have any further doubts, don't hesitate to check out Physics Wallah's notes and solutions. Their detailed explanations and practice problems make learning science both interesting and effective. So let's strive towards mastering these concepts and unleashing our curiosity towards the fascinating world of physics!

CBSE Class 6 Science Notes Chapter 6 FAQs

1. What is a physical change?

Answer: A physical change is a change in which the substance undergoes a change in its physical state or appearance but retains its chemical composition. Examples include changes in shape, size, texture, and state of matter.

2. Can physical changes be reversed?

Answer: Yes, physical changes can be reversed by applying appropriate conditions or methods. For example, melting ice to form water and freezing water to form ice are reversible physical changes.

3. What are the common examples of expansion and contraction in daily life?

Answer: Common examples of expansion and contraction include the expansion of metal rods on heating, the contraction of rubber bands on cooling, the expansion of air in balloons when heated, and the contraction of gases in a syringe when cooled.

4. How does chromatography work?

Answer: Chromatography works by separating the components of a mixture based on differences in their solubility and affinity for the stationary phase. The mixture is passed

through a stationary phase, and as the components move at different rates, they separate into distinct bands or spots.

5. What are the practical applications of distillation and evaporation?

Answer: Distillation is used to separate components of a mixture based on differences in boiling points, such as separating alcohol from water in the production of spirits. Evaporation is used to separate a solute from a solvent, such as separating salt from seawater.