

Week 1: Science - Chemical Reactions and Equations

Subject: Science | Grade: 10 | Generated: 7/23/2025

Lesson Overview Subject: Science Grade: 10 Week: 1 Curricular Objectives Students will be able to identify chemical changes in their daily surroundings. Students will be able to write and balance simple chemical equations. Students will be able to classify different types of chemical reactions (combination, decomposition, displacement, double displacement). Students will be able to understand the concepts of oxidation and reduction in everyday processes. Students will be able to explain the phenomena of corrosion and rancidity and suggest methods for their prevention.

Daily Lesson Breakdown

Chemical Reactions: Observing Changes **Objectives:** Identify chemical reactions. Differentiate between physical and chemical changes. Provide examples of chemical changes from daily life, including cultural contexts.

Activities (45 min)

Begin with a 'Think-Pair-Share' activity: 'What changes do you observe around you daily in your homes or localities? (e.g., cooking food, rusting of iron gates, burning of wood).' **Explore (15 min):** Teacher-led demonstration (if feasible and safe, or via video): Mixing baking soda and lemon juice (gas evolution); heating sugar in a test tube (charring, change in state and color). Students observe and note down changes. **Explain (10 min):** Discuss the characteristics of chemical reactions (change in state, color, temperature, evolution of gas, formation of precipitate). Differentiate between physical and chemical changes using observed examples and common Indian scenarios (e.g., melting of ice cream vs. setting of curd from milk). **Elaborate (10 min):** Group discussion: Students list 2-3 examples of chemical changes from Indian cooking or festivals (e.g., making dosa batter, burning of incense sticks during Puja, bursting of firecrackers during Diwali) and explain why they are chemical changes.

Materials: Soda, lemon juice, small bowl/glass, Sugar, test tube, burner (optional, video alternative), Chart paper/markers for group lists, NCERT Science Textbook for Class X.

Science Textbook Chapter 1.1 'Chemical Reactions' Attempt In-text questions on page 2 (Q1, Q2) in your notebook. Observe and list 3 chemical changes from your kit.

Chapter 1.1 'Chemical Reactions' (pages 1 - 2)

Teaching Notes: Encourage students to connect observations to the theoretical concepts.

Tuesday - Chemical Equations: Writing and Balancing **Objectives:** Understand chemical reactions through equations. Apply the Law of Conservation of Mass to balancing equations. Balance simple chemical equations using the hit and trial method.

Engage (5 min): Quick recap of Monday's concepts: 'What tells us a chemical reaction has occurred?' Show an image of a symbolic recipe from an Indian cookbook and link it to the need for chemical formulas and equations for precision.

Explore (15 min): Introduce chemical equations (word equations vs. chemical equations). Explain chemical formulas of common compounds (e.g., H₂O, CO₂, NaCl, Fe, O₂). Work through converting a skeleton equation (e.g., Magnesium + Oxygen → Magnesium Oxide).

Elaborate (10 min): Collaborative practice: Students work in pairs to balance 2-3 simple equations provided by the teacher on the board. Teacher provides guidance and immediate feedback.

Wednesday - Types of Chemical Reactions: Combination & Decomposition

and identify combination reactions with examples. Define and identify decomposition reactions with examples. Relate these reaction types to real-life applications and common examples (40 minutes):

Engage (5 min): Start with a quick quiz: 'Balance the following chemical equation: Ca + H₂O → Ca(OH)₂ + H₂' Then, introduce the idea of classifying reactions based on what happens.

Explore (15 min): Introduce Combination Reactions (A + B → AB). Discuss examples (C + O₂ → CO₂), formation of water (2H₂ + O₂ → 2H₂O), and importantly whitewashing walls during festivals like Diwali in India.

Explain (10 min): Introduce Decomposition Reactions (AB → A + B). Explain how they are the reverse of combination reactions.

Elaborate (10 min): Provide examples of decomposition reactions (e.g., heat decomposing calcium carbonate to form calcium oxide and carbon dioxide).

Thursday - Revision and Practice

Attempt In-text questions on page 6 (Q1, Q2). Practice balancing 3 more equations from the textbook examples.

Homework: Read NCERT Science Textbook Chapter 1.2 'Chemical Equations' and 'Balancing Chemical Equations'. Attempt In-text questions on page 6 (Q1, Q2). Practice balancing 3 more equations from the textbook examples.

NCERT Reference: Chapter 1 and 'Balancing Chemical Equations' (pages 3 - 6)

Teaching Notes: Encourage step-by-step approach for balancing.

Friday - Revision and Practice

Attempt In-text questions on page 6 (Q1, Q2). Practice balancing 3 more equations from the textbook examples.

NCERT Reference: Chapter 1 and 'Balancing Chemical Equations' (pages 3 - 6)

Teaching Notes: Encourage step-by-step approach for balancing.

Saturday - Revision and Practice

Attempt In-text questions on page 6 (Q1, Q2). Practice balancing 3 more equations from the textbook examples.

NCERT Reference: Chapter 1 and 'Balancing Chemical Equations' (pages 3 - 6)

Teaching Notes: Encourage step-by-step approach for balancing.

Sunday - Revision and Practice

Attempt In-text questions on page 6 (Q1, Q2). Practice balancing 3 more equations from the textbook examples.

NCERT Reference: Chapter 1 and 'Balancing Chemical Equations' (pages 3 - 6)

Teaching Notes: Encourage step-by-step approach for balancing.