

Science

Original practice in 13 topic units, with explanations, worked examples and answer guidance. Use alongside the prescribed texts and syllabus.



13 practice units

78 tasks with answer guidance

Name / नाम: _____

Original selected-topic practice. Use alongside school lessons and the prescribed textbook. The contents define this book's scope.

CBSE course 086 · 2026–27 · Selected practice, not a complete syllabus or official examination paper.

UNIT 01 / 13 · LEARN & TRY

Reaction detective: count, balance, explain

Name: _____ Date: _____

Goal: Balance simple reactions and classify changes using products and observations.

Learn

A chemical equation tells us which substances react and which substances form. Atom counts must agree on both sides because atoms are rearranged, not created or destroyed. Start with correct formulae, count each element and then change coefficients in front of formulae. Never change a subscript to make the numbers agree: H_2O and H_2O_2 are different substances. A balanced equation also helps us describe a reaction. In combination, reactants form one product; decomposition splits a compound; displacement exchanges a more reactive element for a less reactive one. A precipitate is an insoluble solid formed from solutions. Oxidation may involve addition of oxygen or loss of electrons, while reduction is the corresponding opposite process. Explain an observation using the equation rather than simply naming a colour. All examples here are paper-based; laboratory reactions require a teacher, suitable protection and approved apparatus.

Worked example

Balance $\text{Fe} + \text{O}_2 \rightarrow \text{Fe}_2\text{O}_3$. The product has three oxygen atoms, while oxygen arrives in pairs. Use $2\text{Fe}_2\text{O}_3$ to make six product oxygen atoms, so use 3O_2 on the left. The products now contain four iron atoms, requiring 4Fe . The balanced equation is $4\text{Fe} + 3\text{O}_2 \rightarrow 2\text{Fe}_2\text{O}_3$. Check: Fe $4 = 4$; O $6 = 6$. This is combination and iron is oxidised. For the magnesium particle model, $2\text{Mg} + \text{O}_2 \rightarrow 2\text{MgO}$ has two Mg atoms and two O atoms on each side; this is a separate balanced combination reaction.

1. Balance $\text{Mg} + \text{O}_2 \rightarrow \text{MgO}$ and verify atom counts. [2 marks]

2. Classify $\text{CaO} + \text{H}_2\text{O} \rightarrow \text{Ca}(\text{OH})_2$. [2 marks]

UNIT 01 · PRACTISE · 5–6

Reaction detective: count, balance, explain

5. In $\text{CuO} + \text{H}_2 \rightarrow \text{Cu} + \text{H}_2\text{O}$, identify oxidation and reduction. [3 marks]

6. Predict the visible result of mixing aqueous sodium sulphate and barium chloride; give the equation. [3 marks]

Explain one answer. Choose a question to revisit after a few days.

UNIT 01 · ANSWER GUIDANCE

Reaction detective: count, balance, explain

1. $2\text{Mg} + \text{O}_2 \rightarrow 2\text{MgO}$. Both sides have two magnesium and two oxygen atoms.
2. Combination: two reactants give one product. The reaction also releases heat, so it is exothermic.
3. It changes water into a different substance. Balancing preserves chemical identities and changes only coefficients.
4. $\text{Fe} + \text{CuSO}_4 \rightarrow \text{FeSO}_4 + \text{Cu}$. Blue solution becomes pale green as iron(II) sulphate forms; copper deposits on the iron.
5. CuO is reduced by oxygen loss; H_2 is oxidised by oxygen gain. Hydrogen is the reducing agent.
6. A white BaSO_4 precipitate forms: $\text{Na}_2\text{SO}_4(\text{aq}) + \text{BaCl}_2(\text{aq}) \rightarrow \text{BaSO}_4(\text{s}) + 2\text{NaCl}(\text{aq})$.

Teaching note

Count atoms of each element after every coefficient change.

Curriculum reference: https://cbseacademic.nic.in/web_material/CurriculumMain27/SecPart1/Science_SecP1_2026-27.pdf

Selected practice; outcomes are publisher-defined. School practicals, projects and prescribed readings require separate preparation.