

SCO INTERNATIONAL CHEMISTRY OLYMPIAD

CLASS 8 OFFICIAL SYLLABUS

Official Class 8 syllabus with chapter-wise notes, learning outcomes, assessment focus, and global alignment

Designed for schools, teachers, parents, and students; aligned with globally used middle-school science learning expectations, chemistry safety awareness, sustainability, and evidence-based scientific reasoning.

Synthetic Fibres	Metals & Non-metals	Fossil Fuels	Combustion	Sustainability
Objective Paper	Answer Key	Explanations	PDF-ready	Global Standard

SCO International Chemistry Olympiad - Class 8 Official Syllabus

This syllabus is designed as a Grade 8 / middle-school chemistry pathway for global learners. It builds conceptual clarity, scientific vocabulary, real-world reasoning, and responsible decision-making around materials, fuels, and combustion.

Global Pedagogical Alignment

Alignment Lens	How this Class 8 Chemistry syllabus uses it
Scientific literacy and evidence use	Students explain chemical phenomena, evaluate observations, compare materials, and interpret evidence in real-life contexts such as plastics, metals, fuels, and combustion.
Middle-school chemistry core ideas	The course emphasizes matter and interactions, chemical and physical properties, energy in chemical reactions, fuels, and environmental responsibility.
Thinking and working scientifically	Learners compare properties, classify substances, reason from patterns, and connect laboratory-style observations to daily-life materials and safety.
Sustainability and responsible citizenship	The syllabus connects synthetic materials, fossil fuels, combustion products, recycling, resource conservation, and pollution control to responsible choices.

Reference basis: OECD PISA science competencies, ACS middle-school chemistry core concepts, NGSS middle-school matter/chemical reactions expectations, Cambridge Lower Secondary Science strands, and UNESCO Education for Sustainable Development.

Exam Structure

Exam Name	SCO International Chemistry Olympiad
Class / Grade	Class 8
Duration	60 minutes
Question Type	Objective / Multiple Choice Questions
Recommended Question Count	50 questions
Suggested Sections	General Chemistry, Applied/Case Study, Reason-Assertion, Achievers Section
Core Skills	Concept recall, explanation, comparison, data reasoning, sustainability reasoning, safe chemistry awareness

Chapter-wise Syllabus, Small Notes, and Learning Outcomes

Chapter 1: Synthetic Fibres and Plastics

Small Notes for Learning: Introduces polymers, synthetic fibres, plastics, properties, everyday uses, recycling, and environmental responsibility. Students learn why nylon, polyester, PET, PVC, and polyethylene behave differently and why sustainable use matters.

Learning Focus	Learning Outcome
Synthetic Fibres and Plastics	Differentiate natural fibres, synthetic fibres, thermoplastics, and thermosetting plastics.
Synthetic Fibres and Plastics	Explain addition and condensation polymerization at a grade-appropriate conceptual level.
Synthetic Fibres and Plastics	Relate polymer structure to strength, flexibility, melting behavior, and water resistance.
Synthetic Fibres and Plastics	Evaluate responsible choices involving plastic use, recycling, reuse, and waste reduction.

Assessment Focus: MCQs may test polymer examples, fibre properties, plastic categories, recycling symbols, biodegradability, and real-life sustainability decisions.

Chapter 2: Materials: Metals and Non-metals

Small Notes for Learning: Builds understanding of metallic and non-metallic properties using observable evidence such as conductivity, malleability, ductility, lustre, sonority, corrosion, and reaction behavior.

Learning Focus	Learning Outcome
Materials: Metals and Non-metals	Classify substances as metals or non-metals using physical and chemical properties.
Materials: Metals and Non-metals	Explain conductivity and malleability using a simple metallic bonding model.
Materials: Metals and Non-metals	Understand alloys and corrosion resistance, including why stainless steel resists rusting.
Materials: Metals and Non-metals	Apply material-property reasoning to engineering and daily-life choices.

Assessment Focus: MCQs may include classification, alloys, corrosion, conductivity, material selection, safety, and comparative reasoning.

Chapter 3: Coal and Petroleum

Small Notes for Learning: Connects fossil fuel formation, fractional distillation, non-renewability, carbon emissions, and alternative fuels. Students learn how chemistry supports responsible energy decisions.

Learning Focus	Learning Outcome
Coal and Petroleum	Describe fossil fuel formation from ancient organic matter over geological time.
Coal and Petroleum	Explain how fractional distillation separates crude oil by boiling point ranges.
Coal and Petroleum	Identify major petroleum fractions and common uses such as petrol, diesel, kerosene, and lubricants.

Coal and Petroleum	Compare fossil fuels with renewable alternatives using sustainability and environmental evidence.
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Assessment Focus: MCQs may test fuel formation, resource conservation, distillation, fuel fractions, emissions, and sustainability case studies.

Chapter 4: Combustion and Flame

Small Notes for Learning: Develops understanding of combustion as a chemical reaction involving fuel, oxygen, heat, and products. Students connect flame color, complete/incomplete combustion, carbon monoxide risk, fire safety, and pollution.

Learning Focus	Learning Outcome
Combustion and Flame	Explain the conditions required for combustion and distinguish complete from incomplete combustion.
Combustion and Flame	Interpret blue, yellow, and smoky flames using oxygen supply and soot formation.
Combustion and Flame	Recognize hazards such as carbon monoxide, plastic burning emissions, and unsafe fuel use.
Combustion and Flame	Apply fire-control principles and safe chemistry reasoning to everyday contexts.

Assessment Focus: MCQs may test combustion triangle, flame observations, fuel efficiency, pollutants, fire extinguishing, and safety decisions.

Recommended Preparation Roadmap

Step 1 - Concept clarity: Read the chapter notes and build vocabulary: polymer, alloy, hydrocarbon, fraction, combustion, soot, corrosion, and biodegradable.

Step 2 - Observation and reasoning: Compare everyday materials and fuels using properties, uses, safety, and environmental impact.

Step 3 - Practice MCQs: Solve direct, assertion-reason, and case-study questions. Explain why each wrong option is wrong.

Step 4 - Achievers readiness: Practice higher-order questions on recycling, sustainable fuels, flame efficiency, corrosion protection, and material engineering.

Teacher and School Implementation Notes

- Use demonstrations only with safe, school-approved materials and adult supervision.
- Connect chemistry with environmental literacy: plastic waste, safe fuel use, recycling, and air quality.
- Encourage students to justify answers using evidence, not memorization alone.
- Use local examples of materials, fuels, and recycling while keeping the scientific principles universal.