

SYLLABUS AND MARKING SCHEME FOR SOF OLYMPIADS

GRADE 8

About International Mathematics Olympiad (IMO)

One of the popular Math Olympiad, conducted by SOF, the **IMO** is conducted at two levels

Level 1: The first level of the exam is organized in the respective schools of the participants during school hours only.

- The Level 1 exam is an objective-type test having duration of 60 minutes comprising of 35 objective-type questions for classes 1 to 4 and 50 objective-type questions for classes 5 to 12.
- The exam consists of four sections:
Section-1: Logical Reasoning
Section-2: Mathematical Reasoning
Section-3: Everyday Mathematics
Section-4: Achievers Section
- There are separate question papers for each and every class.
- The medium of the exam is English.
- CBSE, ICSE/ISC and other State Board syllabus is followed for the setting of test papers.
- The exam is conducted during school hours only

Level 2: The Level 2 is conducted for students of classes 3 to 12. The qualifiers to second round would include the following:

- Top 5% of candidates class wise that appear for the 1st level exam. Due weightage to marks scored in different sections will be given. Each section is accorded with a separate weightage.
- Zone wise top 25 rank holders class wise.
- Class topper where at least 10 students from a class appear in the exam & have scored 50% qualifying marks.

SOF IMO Syllabus and Marking Scheme

Class	Section	No. of Questions	Marks/Question	Total Marks
1 to 4	Logical Reasoning	10	1	10
	Mathematical Reasoning	10	1	10
	Everyday Mathematics	10	1	10
	Achievers Section	5	2	10
	Grand Total	35		40
5 to 12	Logical Reasoning	15	1	15
	Mathematical Reasoning	20	1	20
	Everyday Mathematics	10	1	10
	Achievers Section	5	3	15

CLASS 8

Section – 1 : Verbal and Non-Verbal Reasoning.

Section – 2 : Rational Numbers, Squares and Square Roots, Cubes and Cube Roots, Exponents and Powers, Comparing Quantities, Algebraic Expressions and Identities, Linear Equations in One Variable, Understanding Quadrilaterals, Constructions, Mensuration, Visualizing Solid Shapes, Data Handling, Direct and Inverse Variations, Factorization, Introduction to Graphs, Playing with Numbers.

Section – 3 : The Syllabus of this section will be based on the syllabus of Mathematical Reasoning.

Section – 4 : Higher Order Thinking Questions - Syllabus as per Section – 2.

DETAILED SYLLABUS

GRADE 8

Online Math Olympiad Class Syllabus for Grade 8

Olympiads are the steppingstones to achieve better results in the competitive world that lies ahead in the life of the child. Math Olympiad examinations help students to improve their mathematical skills along with their analytical and problem-solving abilities.

Hence, Olympiad Success Live has designed the course for Math Olympiad for class 2 in such a way that the foundation of the child is built up. For this, we have done great efforts in finding the tutor for class 2 Math Olympiad with relevant background and experience.

If you are interested in purchasing this course, then please Enrol Now. You will be redirected to the batch detail page, wherein you can see all the details like batch start and demo dates, fees and the registration link related to Math Olympiad for class 2 course.

IMO

Syllabus

Rational Numbers

- Rational number and its examples
- Natural number, Whole number and integer
- Properties of rational numbers (Using identities)
- Representation of rational number on the number line

Linear Equation in One Variable

- Equation, linear equations
- Linear equation in one variable
- Solution of a linear equation
- Laws of equality
- Problems based on linear equations

Understanding Quadrilaterals and Practical Geometry

- Quadrilateral
- Classification of polygons
- Convex and concave polygon
- Regular and irregular polygon
- Angle sum property
- Types of quadrilaterals
- Properties of quadrilaterals
- Interior and exterior angles of a regular polygon
- Constructions of triangles and quadrilaterals

Squares and Square Root, Cube and Cube Root

- Square and square root
 - Square, perfect square and square root
 - Properties of squares
 - Estimating the squares of numbers
 - Determining the square and square roots of positive numbers
- Cube and cube root
 - Cube, perfect cube and cube roots
 - Estimating the cubes of numbers
 - Determining the cube and cube roots of positive numbers
 - Estimating the cubes of numbers

Comparing Quantities

- Ratio and proportion
 - Terms of a ratio
 - Ratio in simplest form
 - Comparison of ratios
 - Continued proportion
 - Problems on property - product of extremes = product of means
 - Problems on percentage
 - Profit and loss
 - Simple interest and compound interest

Algebraic Expressions and Identities

- Algebraic expression
 - Definition of algebraic expression
 - Like and unlike terms
- Polynomial
 - Degree of a polynomial
 - Types of polynomials
 - Multiplication of polynomials
 - Important identities- $(a + b)^2 = a^2 + 2ab + b^2$
 - $(a - b)^2 = a^2 - 2ab + b^2$
 - $(a + b)(a - b) = a^2 - b^2$

Mensuration

- Area and Perimeter
 - Definition of area and perimeter
 - Area and perimeter of rectangle
 - Area and perimeter of square
 - Area of four walls of room
 - Area and perimeter of triangle
 - Area and perimeter of parallelogram
 - Area and circumference of circle
 - Area of sector and segment
 - Length of arc
- Volume
 - Volume of cube, cuboid and cylinder
 - Total surface area of cube, cuboid and cylinder
 - Lateral surface area of cube, cuboid and cylinder
 - Diagonal of cube and cuboid

Exponents and Powers

- Exponential equation
- Standard form of numbers
- Laws of exponents (Integers and rational numbers)
- Positive and negative integral exponent of a rational number

Direct and Inverse Proportions

- Unitary method
- Direct proportion
- Inverse proportion

Factorization

- Definition of factorization
- Important identities- $(a + b)^2 = a^2 + 2ab + b^2$
- $(a - b)^2 = a^2 - 2ab + b^2$
- $(a + b)(a - b) = a^2 - b^2$
- $(x + a)(x - b) = x^2 + (a + b)x - ab$

Data Handling

- Data
 - Definition of data, raw data, array, tabulation, observation, frequency, range, frequency distribution
 - Tally marks
 - Grouped data
 - Mean, median and mode
- Graphical representation
 - Histogram
 - Bar graph
 - Double bar graph
 - Pie chart
- Probability

Visualizing Solid Shapes

- Geometrical shapes
- Description of solid shapes
- Polyhedron
- Euler's formula

Introduction to graphs

- Bar graph
- Pie graph
- Histogram

- Line graph
- Linear graph
- Cartesian system

Playing with Numbers

- General form of a number
- Divisibility tests for 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 and 12

Everyday Mathematics

International English Olympiad (IEO)

We help students of class 1 to 10 in preparation of SOF IEO exam and courses through sample question and practice papers.

About International English Olympiad (IEO)

The exam is a written objective-type test having a duration of 60 minutes comprising 35 objective-type questions for classes 1 to 4 and 50 objective-type questions for classes 5 to 12.

SOF IEO Syllabus and Marking Scheme

Class	Section	No. of Questions	Marks/Question	Total Marks
1 to 4	Word & Structure Knowledge	30	1	30
	Reading			
	Spoken & Written Expression			
	Achievers Section	5	2	10
	Grand Total	35		40
5 to 12	Word and Structure Knowledge	45	1	45
	Reading			
	Spoken and Written Expression			
	Achievers Section	5	3	15
	Grand Total	50		60

CLASS 8

Section – 1: Synonyms, Antonyms, Analogies and Spellings, Collocations, Phrasal Verbs, Idioms or Proverbs, Homonyms and Homophones, One word, Nouns, Pronouns, Verbs, Adverbs, Adjectives, Articles, Prepositions, Prepositional Phrases, Participle Phrases, Conjunctions, Determiners, Jumbled Words and Punctuations, Tenses, Voices and Narrations, Question Tags, etc. Words related to leisure, Household items/issues, social causes, Outdoor locations and activities, etc.

Section – 2: Search for and retrieve information from various text types like News reports, Blurbs, Dictionaries, etc., Understand information presented in instruction manual format, Message format and others. Acquire broad understanding of and look for specific information in longer texts like Editorials, Essays, etc.

Section – 3: Ability to understand situation-based variations in functions like requesting, giving information, Expressing surprise, Pronunciation etc.

Section – 4: Higher Order Thinking Questions - Syllabus as per Sections 1, 2 and 3.

IEO detailed Syllabus

IEO

Syllabus

Chapter 1

Synonyms, Antonyms, Homonyms and Homophones

Chapter 2

Analogies and Spellings

Chapter 3

One word substitutions, Phrasal Verbs and Idioms or Proverbs

Chapter 4

Nouns and Pronouns

Nouns

- Form and use plurals: review

- Form and use plurals of compound nouns
- Identify plurals, singular possessives and plural possessives
- Form the singular or plural possessive
- Identify and correct errors with plural and possessive nouns
- Identify and correct errors with compound and joint possession

Pronouns

- Identify pronouns and their antecedents
- Use the pronoun that agrees with the antecedent
- Choose between subject and object pronouns
- Compound subjects and objects with 'I' and 'me'
- Compound subjects and objects with pronouns
- Choose between personal and reflexive pronouns
- Use reflexive pronouns
- Is the pronoun reflexive or intensive?
- Use relative pronouns: who and whom
- Use relative pronouns: who, whom, whose, which and that
- Identify vague pronoun references
- Identify all of the possible antecedents

Chapter 5

Verbs and adverbs

Verbs and verbals

- Identify transitive and intransitive verbs
- Identify linking verbs, predicate adjectives and predicate nouns
- Correct errors with subject-verb agreement
- Correct errors with indefinite pronoun-verb agreement
- Use the correct verb – with compound subjects
- Irregular past tense: review
- Simple past, present and future tense: review
- Identify and correct inappropriate shifts in verb tense
- Form the progressive verb tenses
- Form the perfect verb tenses

- Identify active and passive voice
- Rewrite the sentence in active voice
- Identify participles and what they modify
- Identify gerunds and their functions
- Identify infinitives and infinitive phrases

Chapter 6

Adjectives

Adjectives and adverbs

- Identify adjectives
- Order adjectives
- Identify adverbs
- Choose between adjectives and adverbs
- Is the word an adjective or adverb?
- Form and use comparative and superlative adjectives
- Good, better, best, bad, worse and worst
- Form and use comparative and superlative adverbs
- Well, better, best, badly, worse and worst

Chapter 7

Articles and Prepositions

Chapter 8

Prepositions, Prepositional Phrases, Participle Phrases

Chapter 9

Conjunctions, Determiners

Chapter 10

Jumbled Words

Chapter 11

Punctuations

Chapter 12

Tenses

Chapter 13

Voices and Narration - Question Tags

Chapter 14

Words related to leisure, Household items/issues, Social causes, Outdoor locations and activities, etc.

Chapter 15

Search for and retrieve information from various text types like News reports, Blurb, Dictionaries, etc.

Chapter 16

Comprehension (Prose and Poetry)

Chapter 17

Understand information presented in instruction manual format, Message format and others

Chapter 18

Acquire broad understanding of and look for specific information in longer texts like editorials, essays, etc.

Chapter 19

Spoken and Written Expression: Ability to understand situation-based variations in functions like requesting, giving information, expressing surprise, pronunciation etc.

National Science Olympiad (NSO)

About National Science Olympiad (NSO)

NSO is conducted at two levels:

Level 1: The first level of the exam is organized in the respective schools of the participants during school hours only.

- The level 1 exam is an objective-type test having a duration of 60 minutes and comprising 35 objective-type questions for classes 1 to 4 and 50 objective-type questions for classes 5 to 12.
- The exam consists of three sections for classes 1 to 10:
Section-1: Logical Reasoning
Section-2: Science
Section-3: Achievers Section

Level 2: The level 2 is conducted for students of classes 3 to 12. The qualifiers to second round would include the following:

- Top 5% of candidates class wise that appear for the 1st level exam. Due weightage to marks scored in different sections will be given. Each section is accorded with a separate weightage.
- Zone wise top 25 rank holders class wise.
- Class topper where at least 10 students from a class appear in the exam & have scored 50% qualifying marks.

SOF NSO Syllabus and Marking Scheme

Class	Section	No. of Questions	Marks/Question	Total Marks
1 to 4	Logical Reasoning	5	1	5
	Science	25	1	25
	Achievers Section	5	2	10
	Grand Total	35		40
5 to 10	Logical Reasoning	10	1	10
	Science	35	1	35
	Achievers Section	5	3	15
	Grand Total	50		60

CLASS 8

Section – 1: Verbal and Non-Verbal Reasoning.

Section – 2: Crop Production and Management, Microorganisms, Synthetic Fibres and Plastics, Metals and Non-metals, Coal and Petroleum, Combustion and Flame, Conservation of Plants and Animals, Cell, Reproduction and Endocrine System, Force and Pressure, Friction, Sound, Chemical Effects of Electric Current, Some Natural Phenomena, Light, Stars and the Solar System, Pollution of Air and Water.

Section – 3: Higher Order Thinking Questions - Syllabus as per Section – 2.

NSO Detailed Syllabus

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NSO

Syllabus

Crop Production and Management

- Agricultural practices
 - Kharif crop
 - Rabi crop
 - Summer crop
- Steps involved in cultivating a crop
- Basic practices of crop production
- Preparation of soil
 - Agricultural implements
 - Plough
 - Hoe
- Cultivator
- Sowing
 - Selection of seeds
 - Traditional tool
 - Seed drill
- Adding manure and fertilizers
 - Crop rotation
 - Advantages of manure
- Irrigation
 - Sources of irrigation
 - Traditional methods of irrigation
 - Modern methods of irrigation
 - Sprinkler system
 - Drip sytem
- Protection from weeds

- Harvesting
 - Threshing and winnowing
- Storage of crops
- Food from animals

Micro-organism

- Microorganism and their classification:
 - Bacteria
 - Fungi
 - Protozoa
 - Viruses
 - Algae
- Place where microorganism live
- Microorganism and us
 - Friendly microorganism
 - Making curd and bread
 - Commercial use of microorganism
 - Medicinal use of microorganism
 - Vaccine
 - Increasing soil fertility
 - Cleaning the environment
- Harmful microorganisms
 - Diseases causing microorganism in humans
 - Diseases causing microorganism in animals
 - Diseases causing microorganism in plants
 - Food poisoning
- Food preservation
 - Chemical method
 - Preservation by common salt
 - Preservation by sugar
 - Preservation by oil and vinegar
 - Heat and cold treatments
 - Storage and packings

- Nitrogen fixation
- Nitrogen cycle

Synthetic Fibres and Plastics

- Synthetic fibres
- Types of synthetic fibres
 - Rayon
 - Nylon
 - Polyester and acrylic
- Characteristic of synthetic fibre
- Plastics
 - Thermosetting
 - Thermoplastics
- Plastics as a material of choice
- Plastic and environment
 - Biodegradable and non-biodegradable substances
 - 5 R principle

Metal and Non-metals

- Metals, non-metals
 - Properties
 - Distinguish between metals and non-metals with the general properties (lustre, conduction of electricity, heat, malleability, ductility, sonority, melting point, boiling point, density, strength)
- Classification of elements as metals & non-metals.
- Corrosion of iron (rusting)
 - ways to prevent rusting (oiling, painting, chrome plating, galvanization, tinning) (avoiding contact with air and water vapour).
- Uses of certain metals (iron, gold, copper, aluminium, zinc, lead, magnesium).
- Metalloids and their metalloids
- Chemical properties of metals and non-metals:
 - Reaction with oxygen
 - Reaction with water
 - Reaction with acids
 - Reaction with bases

- Displacement reactions
- Uses of metals and non-metals

Coal and Petroleum

- Inexhaustible and exhaustible natural resources
- Coal
 - Coke
 - Coal tar
 - Coal gas
- Petroleum
 - Refining of petroleum
 - Constituents of petroleum and their uses
- Natural gas
- Some limited natural resources

Combustion and Flame

- Combustion
 - Combustible and non-combustible substances
 - Ignition temperature
 - Flammable and inflammable substances
- Controlling of fire
- Types of combustion
 - Rapid combustion
 - Spontaneous combustion
- Flame
 - Materials forming flame on burning
 - Structure of a flame
- Fuel
 - Efficiency of fuel: Calorific values
- Burning of fuels leads to harmful products: Global warming, acid rain etc.

Conservation of Plants and Animals

- Deforestation and its causes
- Consequences of deforestation: Drought, desertification etc.

- Conservation of forest and wildlife
 - Protected Areas for Conservation
 - Protected Areas
 - National Park
- Wildlife Sanctuary
- Biosphere Reserve
- Flora and fauna
- Endemic species
- Endangered animals
- Red Data Book
- Migration
- Recycling of paper
- Reforestation

Cells

- Cells and its discovery
- Organisms show variety in cell number (multicellular, unicellular), shape and size
- Plant cell: Cell organelles and their functions
- Animal cell: Cell organelles and their functions
- Diagrams of plant and animal cell
- Only the following to be included: Cell wall, Cell membrane, Plastids, Nucleus, Vacuole, Cytoplasm – their structure and functions
- Differences between plant and animal cells

Reproduction in Animals

- Sexual reproduction in humans
 - Main organs of male and female reproductive system
 - Fertilisation
 - Development of embryo
 - Viviparous and oviparous animals
 - Young ones to adults
- Asexual reproduction
 - Budding

- Binary fission

Force and Pressure

- Force – A Push or a Pull: Definition and examples
- Forces are due to an interaction: Examples
- Balanced and unbalanced forces
- Exploring forces
 - A force can change the state of motion
 - A force can change the shape of an object
- Contact forces: Muscular force, friction etc.
- Non-contact force: Magnetic force, electrostatic force, gravitational force
- Turning effect of force (moment of force): concept, definition and calculation
- Pressure
 - Definition
 - Unit
 - Calculation of pressure in simple cases
 - Atmospheric pressure
 - Pressure exerted by liquids (Qualitative only)
 - Pressure exerted by gases- Atmospheric pressure (Qualitative only)

Friction

- Force of friction
- Factors affecting friction
- Friction: A necessary evil
- Ways to increase and reduce friction
- Wheels reduce friction
- Fluid friction
- Sliding friction, rolling friction, kinetic friction

Sound

- Sources of sound
- Sound as a longitudinal wave
- Characteristics of a sound wave: Amplitude (Relate amplitude with loudness) and Frequency
- Sound needs a medium to propagate

- Reflection and Absorption of sound
- Relative speed of sound in different medium
- Sound produced by vibrating object
- Sound produced by humans
- Pitch and Frequency
 - Pitch and frequency in relation to working of musical instruments (Wind, membrane and String)
- Mono tone
- Amplitude, time period and frequency of a Vibration
 - Loudness and amplitude
- Unit of loudness in decibels
- Audible and inaudible Sounds
- Noise and music
- Noise pollution
 - Measure to limit noise pollution

Chemical Effects of Electric Current

- Conduction of electricity through electricity
 - Good/poor conducting liquids
- Chemical effects of electric current
- Electroplating

Some Natural Phenomena

- Lightning
- Charging by rubbing
- Types of charges and their interaction
- Transfer of charge
 - Electroscope
 - Earthing
- The story of lightning
- Do's and Don'ts during a thunderstorm
- Lightning conductor
- Earthquakes
 - Causes

- Protection against earthquakes
- Seismographs
- Richter scale

Light

- Reflection of light
 - Laws of reflection
 - Lateral inversion
 - Regular and diffused reflection
 - Multiple images
 - Kaleidoscope
- Structure and care of eye
- Visually impaired persons can read and write with the help of braille system
- Refraction: Definition and Examples of Refraction
- Curved Mirrors
 - Convex
 - Concave
 - Reflecting surface (Convex and Concave)
 - Uses of curved mirrors
 - Terms related to curved mirrors –Focus, Principal Axis, centre of curvature, radius of curvature
 - Rules for making ray diagrams of Spherical mirrors.
 - Real and virtual Image
 - Ray diagrams with curved mirrors where real images are formed.
- Dispersion of white light into constituent colours

Stars and Solar System

- Astronomy
- Celestial objects
 - The moon
 - Phases of moon
 - Moon's surface
 - The stars
 - Constellation

- The solar system
 - Sun
 - Planets
 - Comets
 - Asteroids
 - Meteors and meteorites
 - Artificial satellites

Pollution of Air and Water

- Air pollution
 - Substances which contaminate the air
 - Case study- Taj Mahal
 - Greenhouse effect
 - Global warming
 - Ways to reduce pollution
- Water pollution
 - How does water get polluted?
 - What is potable water and how is water purified?
 - Ways to reduce water pollution

REASONING

Syllabus

General Mental Ability

- Analogy
- Classification
- Series Completion
- Coding-Decoding
- Blood Relations
- Puzzle Test
- Sequential Output Tracing
- Direction Sense Test
- Logical Venn Diagram
- Alphabet Test
- Number, Ranking and Time Sequence Test
- Mathematical Operations
- Logical Sequencing of Words
- Arithmetical Reasoning
- Inserting the Missing Character
- Data Sufficiency
- Decision Making
- Assertion and Reason
- Situation Reaction Test
- Verification of Truth of the Statement

Logical Reasoning

- Logic
- Statement - Arguments
- Statement - Assumptions
- Statement - Courses Of Action
- Statement - Conclusions

- Deriving Conclusions from Packages
- Theme Detection
- Question - Statements
- Miscellaneous Logical Puzzles

Verbal Reasoning

- Series
- Analogy
- Classification
- Analytical Reasoning
- Mirror Images
- Water Images
- Embedded Figures
- Completion of Incomplete Pattern
- Figure Matrix
- Paper Folding
- Paper Cutting
- Rule Detection
- Grouping of Identical Figures
- Cubes and Dice
- Dot Situation
- Construction of Squares and Triangles
- Figure Formation and Analysis