



GRADE 3 · AI OLYMPIAD HANDBOOK

AI Olympiad Handbook

A complete guide for Grade 3 students — the full syllabus, exam pattern, an 8-week preparation strategy, exam-day tips, and the detailed curriculum for every section.

4

SECTIONS (A–D)

35

TOTAL QUESTIONS

40

TOTAL MARKS

60

MINUTES DURATION

1. Syllabus

Section	Topics
A: CT & Logical Reasoning	3D viewpoints, shape flips/turns/folds, hidden shapes, number patterns, shape patterns, letter patterns (Caesar Cipher), number clues (place value), faces/edges/corners, step-by-step exchanges, tables/charts, grid movements, before/after/in-between clues, multi-step instructions
B: AI & Technology Concepts	What is AI, smart machines, human vs. machine, AI vs. ordinary machines, supervised learning, clustering, reinforcement learning, data types (numbers, text, images, sound), AI learning process
C: Everyday AI Around Us	AI in daily life (apps/devices), AI in India (Bhashini, DigiYatra), smart devices, robotics, drones, pattern recognition, decision-making, AI ethics, digital safety, digital footprints
D: Elite Thinker	System decomposition, algorithmic pathfinding, 3D logic & spatial modeling, Sense–Think–Act cycle, critical ethical analysis

2. Exam Pattern

Section	Title	Questions	Marks	Total
A	CT & Logical Reasoning	10	× 1	10
B	AI & Technology Concepts	10	× 1	10
C	Everyday AI Around Us	10	× 1	10
D	Elite Thinker	5	× 2	10
Total		35		40 Marks

 **60**

MINUTES DURATION

No

NEGATIVE MARKING

3. Preparation Strategy

Phase 1: Build Concepts (Weeks 1–3)

Section	What to Do
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A	Use blocks for 3D views. Fold paper for shapes. Solve daily pattern puzzles (5 minutes). Practice grid mazes.
B	Draw a Human vs. Machine chart. Supervised Learning = Teacher, Clustering = Sorting Toys, Reinforcement Learning = Gold Stars. Sort pictures into the four data types.
C	Find five AI devices at home. Watch short videos (2 minutes) on Bhashini and DigiYatra. Discuss digital safety and digital footprints.
D	Practice the Sense–Think–Act cycle daily (e.g., "See ball → Think → Catch"). Break a robot into its parts. Practice grid path activities.

Phase 2: Practice (Weeks 4–5)

Daily	Saturday
Solve 1 puzzle	Take a section-wise test
Practice 5 MCQs	(10 questions each for Sections A, B, and C; 5 questions for Section D)
Learn 1 new topic	

Phase 3: Mock Drills (Weeks 6–8)

Week	Plan
6	Attempt 2 full mock tests (35 questions, 60 minutes) and review mistakes.
7	Solve 3 previous years' papers and focus on Section D by writing complete answers.
8	Take the final mock test, do light revision, and relax the day before the exam.

4. Exam Day Strategy

Section	Time	Strategy
A	12 min	Attempt the easy questions first and skip difficult ones initially.
B	12 min	Trust your memory and avoid overthinking.
C	12 min	Think of real-life examples to answer confidently.
D	15 min	Write clear answers in 2–3 sentences for each question.
Review	9 min	Check all your answers carefully before submitting the paper.

4. Detailed Curriculum

A

CT & Logical Reasoning

Abstract thinking, pattern recognition, decomposition & algorithmic thinking

Abstract Thinking: Abstract Thinking focuses on solving problems where the core idea or transformation is not immediately visible, requiring mental modeling and visualization.

1. **Different Viewpoints of 3D Objects:** Students must identify and interpret how objects appear from the top, side, or front. This includes recognizing 2D representations of 3D solids, such as identifying a square as the top view of a specific block structure.
2. **Changes in Shapes After Flips, Turns, Folds, or Rotations:** Learners analyze how a shape's orientation or properties change through mental manipulation. Examples include determining which identical shapes will overlap when a sheet is folded along a line or identifying what a figure looks like after a 90° or 180° turn.
3. **Hidden or Missing Parts in Incomplete Shapes or Patterns:** This involves using logic to complete a grid or figure such that the collective parts form a specific geometric shape, such as a square. Students also learn to identify shapes "hidden" within more complex diagrams.

Pattern Recognition: Pattern Recognition involves identifying recurring themes, rules, or trends within data sets to make predictions or simplify information.

1. **Numbers:** Students recognize and extend numerical sequences by identifying the underlying operation (e.g., adding a specific value at each step). This includes finding the "next term" in a series based on observed mathematical relationships.
2. **Shapes or Images:** This entails identifying progressive patterns where visual attributes like size, count, or position change in a predictable manner.
3. **Letters:** This involves recognizing logical shifts in the alphabet, such as those used in a Caesar Cipher. Students learn to encrypt and decrypt messages by shifting letters by a specific "key" or number of positions.

Decomposition: Decomposition is the process of breaking down a large, complex problem into smaller, more manageable logical pieces.

1. **Number Clues or Number Names:** Students deconstruct multi-digit numbers based on verbal or written clues, such as place value, sum of digits, or specific constraints (e.g., "the tens digit is twice the hundreds digit").
2. **3D Objects and Their Parts (Faces, Edges, Corners):** Learners analyze solids by identifying their component parts, such as counting the number of surfaces or hidden corners in a block structure.
3. **Step-by-Step Exchanges or Transfers (Money, Objects, Digits):** This involves deconstructing complex transactions into a series of individual moves. For instance, calculating final amounts after multiple friends exchange pencils or determining the minimum amount of money needed to be shifted between three people to equalize their totals.
4. **Tables or Charts with Multiple Pieces of Information:** Students must filter through datasets to find relevant information and eliminate possibilities. This includes cross-referencing height bars with specific names or using row-based constraints to solve puzzles.

Algorithmic Thinking: Algorithmic Thinking is the ability to design or follow a precise, step-by-step procedure to reach a valid or optimal solution.

1. **Number Sequences Formed Using Simple Operations:** Students follow algorithmic rules to generate or complete number strings based on operations like addition or subtraction.
2. **Movements on Grids or Direction-Based Paths:** This involves following direction-based instructions (Up, Down, Left, Right) to navigate from a starting point to an end goal, often with path constraints or item collection rules.
3. **Events Arranged Using Before/After/In-Between Clues:** Learners must sequence people, objects, or days of the week by interpreting chronological or logical clues (e.g., "Raj did not go on Monday; Aryan went on Friday").
4. **Values that Increase or Decrease Across Steps:** This focuses on tracking changing variables throughout a process, such as a frog jumping forward 4 steps and slipping back 2, to determine when a final goal will be reached.
5. **Multi-Step Instructions Involving Moves, Changes, or Transfers:** Students follow elaborate rules to solve complex tasks, such as skipping blocks in a specific pattern based on their color or arranging coins into stacks where each stack has one more coin than the last.

B**AI & Technology Concepts**

How AI works and the technical domains

This section introduces learners to the foundational concepts of Artificial Intelligence and helps them understand how smart machines work, learn, and assist people in everyday activities.

Foundations of AI

1. **What is Artificial Intelligence?** Understanding AI as technology that enables machines to perform tasks that usually require human thinking, such as recognizing voices, identifying images, and making simple decisions.
2. **Smart Machines Around Us:** Identifying common AI-powered devices and applications used in homes, schools, and daily life.

Human vs. Machine Intelligence

1. Understanding how humans learn through observation, experience, and practice.
2. Exploring how machines learn by processing information and identifying patterns in data.
3. Comparing the strengths of humans, such as creativity and emotions, with the strengths of machines, such as speed, accuracy, and memory.

AI vs. Ordinary Machines

1. Recognizing the difference between machines that follow fixed instructions and machines that can learn from data.
2. Understanding how AI systems can improve their performance by learning from examples and experiences.

How AI Learns

1. **Learning with Examples:** Understanding that AI can learn by studying labeled examples.

2. **Finding Similar Things:** Exploring how AI groups similar objects, images, or information together.
3. **Learning through Rewards:** Understanding how AI can improve through trial and error by receiving rewards for correct actions.

Understanding Data

1. Identifying different types of data used by AI, including numbers, text, images, and sounds.
2. Understanding that AI uses data to learn, make decisions, and solve problems.
3. Recognizing examples of data collected and used in everyday applications.



Everyday AI Around Us

Recognizing AI in daily life, and using technology safely and ethically

This section focuses on helping learners recognize the presence of AI in their daily lives and understand how technology can be used safely, responsibly, and ethically.

AI in Daily Life

1. Identifying AI applications in smartphones, voice assistants, cameras, games, and entertainment platforms.
2. Understanding how AI helps people through recommendations, voice typing, translation tools, and personalized experiences.
3. Exploring examples of AI that make everyday tasks faster, easier, and more convenient.

AI in India

1. Exploring AI-enabled initiatives such as Bhashini and DigiYatra that improve communication and travel experiences.
2. Understanding how AI and digital technologies help deliver services and information to citizens.
3. Recognizing the role of technology in improving accessibility and efficiency in daily life.

Smart Devices and Robotics

1. Understanding how smart home devices such as speakers, lights, and wearable gadgets use AI to assist users.
2. Exploring simple AI-powered robots, robot pets, and machines that can respond to commands or environmental changes.
3. Learning about drones and other smart technologies used for observation, delivery, and exploration.

Patterns and Decision Making

1. Observing patterns in everyday life, including routines, schedules, weather changes, and natural surroundings.
2. Understanding how identifying patterns helps people and machines make predictions and decisions.
3. Developing logical thinking skills by recognizing relationships and trends in information.

AI Ethics and Responsible Use

1. Understanding that AI should be used in ways that are fair, safe, and helpful to everyone.
2. Recognizing that AI systems can sometimes make mistakes and should be used responsibly.

3. Developing awareness of fairness, kindness, and respect while interacting with AI-powered technologies.

Digital Safety and Responsibility

1. Practicing safe and responsible use of digital devices and online platforms.
2. Understanding the importance of protecting personal information such as passwords and private details.
3. Developing positive online behavior and learning how to make safe choices while using technology.

Digital Footprints

1. Understanding that actions performed online create a digital record that can remain for a long time.
2. Recognizing how sharing information, photos, and messages contributes to a digital footprint.
3. Encouraging responsible digital citizenship by making thoughtful and safe decisions online.



Elite Thinker

Applied computational thinking and artificial intelligence

Computational Thinking (CT) — 3 Focus Areas

- **System Decomposition:** Breaking down a multi-disciplinary project (like the Wireless Robot or Door Bell) into its specific electronic components and coding logic.
- **Algorithmic Pathfinding:** Designing optimal flight paths for Drone Simulation or precise geometric movements for Making a Square with a Robot using loops and conditional logic.
- **3D Logic & Spatial Modeling:** Applying mental transformations (rotations/scaling) to create complex 3D Designs, such as the bird or whistle models.

Artificial Intelligence (AI) — 2 Focus Areas

- **Integrated AI Systems:** Analyzing the "Sense-Think-Act" cycle in the Expression Mimicking Robot, where Computer Vision (sensing) triggers robotic movement (acting).
- **Critical Ethical Analysis:** Evaluating real-world scenarios involving privacy in Face Filters or the social responsibility of Robot Pets.

Bharat Olympiads

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