



National Cyber Olympiad

The actual test paper has 50 questions. Time allowed : 60 minutes. There are 3 sections: 15 questions in section I, 15 in section II and 20 in section III.

SYLLABUS

Section – I (Mental Ability) : Rational Numbers, Operation on Rational Numbers, Decimal Representation of Rational Numbers, Exponents, Direct and Inverse Variations, Percentage and Its Application, Algebraic Expression, Factorization of Algebraic Expressions, Linear Equation in One Variable, More About Triangles, Congruent Triangles, Quadrilaterals, Circles, Area of Rectangular Paths, Surface Area and Volumes, Statistics, Squares and Square Roots, Cubes and Cube Roots.

Section – II (Logical and Analytical Reasoning) : Problem Based on Figures, Find Odd Numeral Out, Series Completion, Coding-Decoding, Mathematical Reasoning, Analytical Reasoning, Mirror Images, Embedded Figures.

Section – III (Computers and IT) : Internet & Viruses, HTML, Flash, MS-Access, Networking, MS-Word, MS-Power Point, MS-Excel, Hardware, Software, Input & Output Devices, Memory & Storage Devices.



National Science Olympiad

The actual test paper has 50 questions. Time allowed : 60 minutes. There are 2 sections: 15 questions in section I and 35 in section II.

SYLLABUS

Section – I (Mental Ability) : Rational Numbers, Operation on Rational Numbers, Decimal Representation of Rational Numbers, Exponents and Powers, Direct and Inverse Variations, Comparing Quantities, Algebraic Expression, Factorization of Algebraic Expressions, Linear Equation in One Variable, More About Triangles, Congruent Triangles, Quadrilaterals, Circles, Mensuration, Statistics, Arithmetic Ability, Squares and Square Roots, Cubes and Cube Roots, Problem Based on Figures, Find Odd Numeral Out, Series Completion, Coding-Decoding, Mathematical Reasoning, Analytical Reasoning, Mirror Images, Embedded Figures.

Section – II (Science) : 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 in Animals, Force and Pressure, Friction, Sound, Chemical Effects of Electric Current, Some Natural Phenomena, Light, Stars and Solar System, Pollution of Air and Water.



International Mathematics Olympiad

The actual test paper has 50 questions. Time allowed : 60 minutes. There are 3 sections: 20 questions in section I, 20 in section II and 10 in section III.

SYLLABUS

Section – I (Logical Reasoning) : Mathematical Operations, Series Completion, Direction Sense Test, Analytical Reasoning, Problems on Cubes and Dice, Number Ranking & Time Sequence Test and General Reasoning Based on Prescribed Syllabus.

Section – II (Mathematical Reasoning) : Squares and Square Roots, Cubes and Cube Roots, Exponents and Radicals, Comparing Quantities, Algebraic Identities, Polynomials, Equations in One Variable, Parallel Lines, Special Types of Quadrilaterals and Their Constructions, Mensuration, Arithmetic Ability, Data Handling.

Section – III (Everyday Mathematics) : The Syllabus of this section will be based on the syllabus of Mathematical Reasoning.



International English Olympiad

The actual test paper consists of 50 questions. Time Allowed : 60 minutes. There are 3 sections.

SYLLABUS

Section-I: Word and Structure Knowledge : Prepositional phrases, Participle phrases, Tenses, Question tags, Conditionals, Reported speech. Spellings, Collocations, Phrasal verbs, Idioms, Homonyms and homophones, Words related to leisure, Household items/issues, Social causes, Outdoor locations and activities, etc.

Section-II: Reading : Search for and retrieve information from various text types like News reports, Blurb, 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.

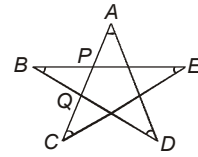
Section-III: Spoken and Written Expression : Ability to understand situation-based variations in functions like requesting, Giving information, Expressing surprise, etc.



National Cyber Olympiad

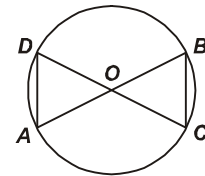
MENTAL ABILITY

1. In the star shape shown in figure, the sum of the angles marked at the corners A, B, C, D, E is
- (A) 90° (B) 135°
(C) 180° (D) 140°



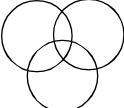
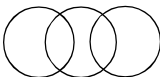
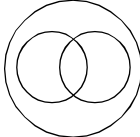
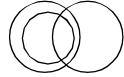
2. The age of a man is same as his wife's age with the digits reversed. Then sum of their ages is 99 and the man is 9 years older than his wife. How old is the man?
- (A) 50 (B) 49 (C) 54 (D) 44

3. In the adjoining figure, AOB and COD are the diameters of a circle. If $\angle ADO = 55^\circ$ then $\angle OCB$ is
- (A) $27\frac{1}{2}^\circ$ (B) $62\frac{1}{2}^\circ$
(C) 55° (D) 35°



4. A cylinder and a cone have the same height and the same radius of the base. The ratio between the volumes of the cylinder and the cone is
- (A) 1 : 3 (B) 3 : 1 (C) 1 : 2 (D) 2 : 1


LOGICAL & ANALYTICAL REASONING

5. If in a certain code SAND is VDQG and BIRD is ELUG, then what is the code for LOVE?
- (A) PRYG (B) ORTG (C) NPUH (D) ORYH
6. The number of times in a day the hour-hand and the minute-hand of a clock are at right angles is
- (A) 44 (B) 48 (C) 24 (D) 12.
7. Which one of the following diagrams correctly represents the relationship among tennis fans, cricket players and students?
- (A)  (B)  (C)  (D) 

8. A, B, C, D, E and F, not necessarily in that order, are sitting on six chairs regularly placed around a round table. It is observed that A is between D and F, C is opposite D, D and E are not on neighbouring chairs. The person sitting opposite B is
- (A) A (B) D (C) E (D) F

COMPUTERS & INFORMATION TECHNOLOGY

9. Which of the following is INCORRECT?
- (A) `<hr>` (B) `<HR>`
(C) ` Bold Text ` (D) All of these
10. Computers use the seven digit code called ASCII. What does ASCII stand for?
- (A) American Standard Code for Information Interchange
(B) Association of Software Coding and Information Institute
(C) American Standard Computing and Information Institute
(D) American Scientists Convention for Information Interchange.
11. How many sheets are there in Excel Workbook by default?
- (A) 2 (B) 3 (C) 4 (D) 5

12. In flash,  is called

- (A) Fill color (B) Paint bucket (C) Ink bottle (D) Lasso

13. Modern Computers do not work with decimal numbers. Instead they process binary numbers, groups of 0's and 1's because

- (A) Electronic devices are most reliable when designed for two state (binary) operation
(B) Binary circuits are simple
(C) Memory is only possible for binary numbers
(D) With decimal numbers, the circuits are complex and costly

14. What are the columns in a Microsoft Access table called?

- (A) Rows (B) Records (C) Fields (D) Columns

15. Debug is a term denoting

- (A) Error correction process (B) Writing of instructions in developing a new program
(C) Fault detection in equipment (D) Determining useful life



National Science Olympiad

MENTAL ABILITY

1. A contest began at noon one day and ended 1000 minutes later. At what time did the contest end?
(A) 10:00 p.m. (B) Midnight (C) 2:30 a.m. (D) 4:40 a.m.

2. Which of the following sets of whole numbers has the largest average?

- (A) Multiples of 2 between 1 and 101 (B) Multiples of 3 between 1 and 101
(C) Multiples of 4 between 1 and 101 (D) Multiples of 5 between 1 and 101.

3. Beena used a calculator to find the product 0.075×2.56 . She forgot to enter the decimal points. The calculator showed 19200. If Beena had entered the decimal points correctly, the answer would have been

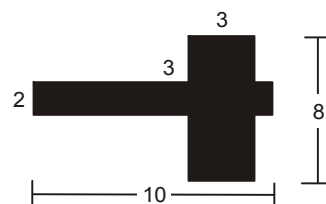
- (A) 0.0192 (B) 0.192 (C) 1.92 (D) 19.2

4. Two cyclists, k km apart, and starting at the same time, would be together in r hours if they travelled in the same direction, but would pass each other in t hours if they travelled in opposite directions. The ratio of the speed of the faster cyclist to that of the slower is

- (A) $\frac{r+t}{r-t}$ (B) $\frac{r}{r-t}$ (C) $\frac{r+t}{r}$ (D) $\frac{r}{t}$

5. The shaded area formed by the two intersecting perpendicular rectangles, in square units is

- (A) 23 (B) 38
(C) 44 (D) 46

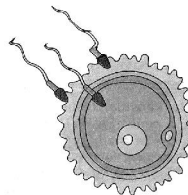


SCIENCE

6. **A Brief History of Time** is the title of a book written by

- (A) Albert Einstein (B) Stephen Hawking
(C) Hendrick Lorentz (D) Isaac Newton

7. Which of the following can produce a virtual image ?
 (A) Plane mirror (B) Concave lens (C) Convex lens (D) All of these
-
8. When a glass rod is rubbed with a piece of silk cloth
 (A) Both cloth and the rod acquire positive charge
 (B) Rod becomes positively charged while the cloth has a negative charge
 (C) Rod becomes negatively charged while the cloth has a positive charge
 (D) Both cloth and the rod acquire negative charge.
-
9. A body immersed in a fluid experiences an upward thrust which depends on
 (A) The weight of the fluid displaced by it (B) The volume of the body
 (C) The mass of the body (D) All of these.
-
10. When Cu is exposed to moist air for a long time, which of the following is formed?
 (A) $\text{Cu}(\text{OH})_2$ (B) CuCO_3 (C) Both (A) and (B) (D) Cu_2O
-
11. Which of the following statements is true with respect to diamond ?
 (A) The carbon atoms are connected to each other by metallic bonds.
 (B) In the diamond crystal, the carbon atoms are very loosely packed.
 (C) Each carbon atom in the crystal is surrounded by four others at the corners of a regular tetrahedron.
 (D) It is a very soft substance.
-
12. Which of the following is an acute infection of the small intestine caused by a bacterium?
 (A) Cholera (B) Tuberculosis (C) Polio (D) Night blindness
-
13. Some basic steps are needed in agricultural practice. Which of the following given as A, B, C, D is the right sequence?
 (1) Preparation of the soil (2) Harvesting (3) Irrigation
 (4) Broadcasting (5) Tilling (6) Weeding
 (7) Manuring.
 (A) 1, 5, 4, 7, 3, 6, 2 (B) 1, 3, 5, 6, 4, 2, 7 (C) 1, 3, 5, 2, 4, 6, 7 (D) 1, 5, 6, 2, 4, 7, 3
-
14. The process shown in the given figure is
 (A) Cleavage
 (B) Fertilization
 (C) Assimilation
 (D) Budding.



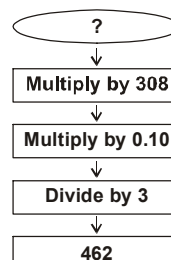
15. Which of the following is not true?
 (A) Burning of coal releases SO_2 . (B) Acid rain is harmful to crops.
 (C) CNG is a clean fuel. (D) Incomplete combustion of coal releases O_2 .



International Mathematics Olympiad

LOGICAL REASONING

1. What is the number you started with?
 (A) 5
 (B) 45
 (C) 56
 (D) 25



2. One term in the number series is wrong. Find out the wrong term.

24, 27, 31, 33, 36

- (A) 24 (B) 27 (C) 31 (D) 33

3. A is 40 m South-west of B. C is 40 m South-East of B. Then C is in which direction of A?

- (A) East (B) West (C) North-east (D) South

4. Count the number of cubes in the figure given here.

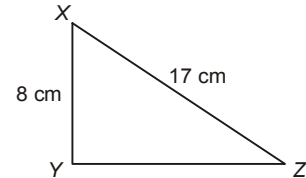
- (A) 14 (B) 15
(C) 12 (D) 20



MATHEMATICAL REASONING

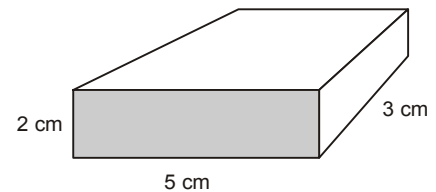
5. What is the length of \overline{YZ} ?

- (A) 9 cm (B) 15 cm
(C) 19 cm (D) 25 cm



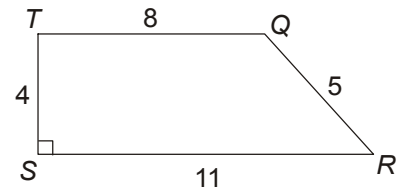
6. What is the volume of the rectangular solid shown below?

- (A) 10 cubic cm (B) 25 cubic cm
(C) 30 cubic cm (D) 62 cubic cm



7. What is the area of trapezoid QRST in square units?

- (A) 22 (B) 27
(C) 38 (D) 48



8. Which property is used in the equation given below?

$$12(x + 4) = 12x + 48$$

- (A) Associative Property of Addition (B) Commutative Property of Addition
(C) Distributive Property (D) Reflexive Property

9. Which of the following equations illustrates the inverse property of multiplication?

- (A) $5 \times \frac{1}{5} = 1$ (B) $5 \times 1 = 5$ (C) $5 \times 0 = 0$ (D) $5 \times 5 = 25$

10. A right triangle's hypotenuse has length 5 units. If one leg has length 2 units, what is the length of the other leg?

- (A) 3 (B) $\sqrt{21}$ (C) $\sqrt{29}$ (D) 7

11. The sum of a number (n) and 14 is 72. Which equation shows this relationship?

- (A) $14 + n = 72$ (B) $72n = 14$ (C) $14 - n = 72$ (D) $72 + n = 14$

12. Find the value of x

$$\frac{9x+7}{2} - \left[x - \left(\frac{x-2}{7} \right) \right] = 36$$

- (A) 9 (B) 18 (C) 5 (D) 4.

EVERYDAY MATHEMATICS

13. Dennis the Menace is thinking of two numbers. Their greatest common factor is 6. Their least common multiple is 36. One of the numbers is 12. What is the other number?

- (A) 18 (B) 16 (C) 6 (D) 24

14. Farmer Ramu put a square fence around his vegetable garden to keep the deer from eating his corn. One side was 10 m in length. If the posts were placed 2 m apart, how many posts did he use?
 (A) 16 (B) 20 (C) 10 (D) 15
-
15. Anita passed around a basket of strawberries to the girls at her party. Before the party she ate 5 strawberries and gave a friend 3. Eight girls arrived at the party. The first girl took a strawberry, the second girl took 3 strawberries, the third girl took 5 strawberries and so on. After the last girl took her strawberries, the basket was empty. How many strawberries were there in the basket at the beginning?
 (A) 72 (B) 60 (C) 65 (D) 45
-



International English Olympiad

WORD AND STRUCTURE KNOWLEDGE

1. Choose the odd pair.
 (A) Annoy : Irritate (B) Comprehend : Understand
 (C) Spectator : Onlooker (D) Reserve : Supply
-
2. The thief walked away with the diamond crown on display. No one stopped him because he was the director of the museum.
 (A) Contacting (B) Impersonating (C) Implanting (D) Contradicting
-
3. The transmission of the President's speech remained ____ interrupted.
 (A) Mis (B) Dis (C) Un (D) Non
-
4. **Given below are pairs of sentences, marked 'P' and 'Q'. In each case, one or both sentences could be right or wrong. Use the following code to indicate your answer.**
If both P and Q are right, tick A (+ +)
If P is right and Q is wrong, tick B (+ -)
If P is wrong and Q is right, tick C (- +)
If both P and Q are wrong, tick D (- -)
 P : The old abandoned building was being burnt to the ground last night.
 Q : The police suspect that the fire was caused due to short circuit.
 (A) (+ +) (B) (+ -) (C) (- +) (D) (- -)
-

Directions (Q. No. 5 & 6) : Find the incorrect part and mark it in your answer sheet.

5. The papers are increasing/ full of stories /of mindless violence./No error.
 (A) (B) (C) (D)
-
6. The Taj Residency/ is not as expensive than/ the Four Seasons Hotel./ No error.
 (A) (B) (C) (D)
-
7. Maya and Anand for five years.
 (A) Has been married (B) Have been married
 (C) Are married (D) Is married

READING

Direction (Q. No. 8 to 10) : Read the following passage and answer the questions that follow.

The greatest threat to life on Earth today comes from global warming. This is caused due to multiple factors including human activity. It happens when greenhouse gases (carbon dioxide, water vapour, nitrous oxide, and methane) trap heat and light from the sun in the earth's atmosphere, which increases the overall temperature on Earth. This impacts people, animals, and plants. Many who cannot take the change, die. Global warming is affecting many parts of the world, particularly sea coasts. People living on islands and in coastal areas are therefore at risk as the polar ice caps and sea levels rise.

8. Select the statement that is false, according to the passage.
 (A) Life on Earth is threatened only by global warming.
 (B) Global warming threatens human beings who live on islands.
 (C) When the overall temperature on Earth rises the sea level will also increase.
 (D) Creatures which cannot adapt to higher temperatures will become extinct.
-
9. "Many cannot take the change." Here "change" refers to changes in
 (A) Lifestyle (B) Food habits (C) Temperature (D) Health issues
-
10. People living in coastal areas are affected by
 (A) Green house gases (B) Human actions
 (C) Rise in sea levels (D) Rise in temperature

SPOKEN AND WRITTEN EXPRESSION

Direction (Q. No. 11 to 13) : Sentences 1 and 3 are given. Sentence 2 is missing. Find the right sentence for sentence 2.

11. Sona : Hema, I notice your tennis serve is much better these days.
 Hema :
 Sona: Your efforts have not been wasted. There is a remarkable improvement in your game.
 (A) Yes, I think I've finally mastered the technique, though it took months of practice.
 (B) Serving well is an art that can be mastered.
 (C) I saw a doctor because I was suffering from tennis elbow.
 (D) In tennis one has to focus on one's serving action.
-
12. Mala : I was looking for a birthday present for my nephew but I didn't have much luck. Do you have any bright ideas?
 Jhansi :
 Mala : I did think about it, but I felt I should take some trouble and choose something useful.
 (A) Some music, maybe? (B) One need not buy a present for everyone.
 (C) You could just give him some money.
 (D) Buying a present is something that only the young enjoy.
-
13. Sentence 1 : A trained memory is an immense asset, particularly in public life.
 Sentence 2 :
 Sentence 3 : Many of these systems, still used today were perfected by the Greeks.
 (A) The basic principle is to concentrate the mind on whatever you want to memorize.
 (B) Ancient Greeks encouraged students to cultivate their memory.
 (C) Memory training systems are not very difficult to master.
 (D) A good memory is an advantage.

Direction (Q.No. 14 and 15) : Sentences 1 and 4 are given. Sentence 2 and 3 are missing. Select two sentences that will complete the paragraph.

14. Sentence 1 : Today's world is full of gizmos and gadgets unimaginable to people thirty years ago.
 Sentence 2 :
 Sentence 3 :
 Sentence 4 : However, keeping abreast of technology seems a difficult job by itself considering the pace at which new gadgets appear on the market.
 (A) The markets cater to this section and keep bringing out products that cater to their taste.
 (B) Students and the youth like to keep abreast of technology.
 (C) Who would have imagined a world of cell phones and ipods?
 (A) AC (B) BA (C) BC (D) CA
-
15. Sentence 1 : Disposal of household waste is a daunting task for local authorities.
 Sentence 2 :
 Sentence 3 :
 Sentence 4 : One way to reduce waste therefore is to segregate degradable and non biodegradable waste at its source.
 (A) Efforts should be made to recycle household waste.
 (B) They cannot just dump waste in landfills.
 (C) This is because household waste contains many materials and substances which are extremely harmful to the environment.
 (A) BC (B) AB (C) CB (D) AC

SAMPLE ANSWER SHEET

1. **NAME :** If your name is SACHIT AIYER, then you should write as follows :

S	A	C	H	I	T	A	I	Y	E	R													
---	---	---	---	---	---	---	---	---	---	---	--	--	--	--	--	--	--	--	--	--	--	--	--

2. **FATHER'S NAME :** If your father's name is SATISH KUMAR SHARMA, then you should write as follows :

S	A	T	I	S	H	K	U	M	A	R	S	H	A	R	M	A							
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	--	--	--	--	--	--	--

SCHOOL CODE				
M	H	0	5	7
A	A	●	0	0
B	B	1	1	1
C	C	2	2	2
D	D	3	3	3
E	E	4	4	4
F	F	5	●	5
G	G	6	6	6
H	●	7	7	7
I	I	8	8	8
J	J	9	9	9
K				
L				
M				
N				
O				
P				
Q				
R				
S				
T				
U				
V				
W				
X				
Y				
Z				

3. SCHOOL CODE

Write your school code i.e. if your school code is MH0547 darken as follows :

Darken the circle

6. GENDER
If you are a boy, then darken Male circle

GENDER	
MALE ●	FEMALE ○

4. CLASS
If you are in Class 10, then you should darken as follows :

5. ROLL NO.
If your roll no. is 587, then you should write and darken the circles as follows :

CLASS		ROLL NO.		
1	0	5	8	7
0	●	0	0	0
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	●	5	5
6	6	6	6	6
7	7	7	7	●
8	8	8	●	8
9	9	9	9	9

Darken the circle

CORRECT
way to darken the circle

WRONG
way to darken the circle

7. If your choice for Answer 1 is C, then you should darken the circle as follows :

1. (A) (B) ● (D)

MARK YOUR ANSWERS WITH HB PENCIL/BALL POINT PEN (BLUE/BLACK)

National Cyber Olympiad

- | | | | | |
|---------------------|---------------------|---------------------|---------------------|---------------------|
| 1. (A) (B) (C) (D) | 2. (A) (B) (C) (D) | 3. (A) (B) (C) (D) | 4. (A) (B) (C) (D) | 5. (A) (B) (C) (D) |
| 6. (A) (B) (C) (D) | 7. (A) (B) (C) (D) | 8. (A) (B) (C) (D) | 9. (A) (B) (C) (D) | 10. (A) (B) (C) (D) |
| 11. (A) (B) (C) (D) | 12. (A) (B) (C) (D) | 13. (A) (B) (C) (D) | 14. (A) (B) (C) (D) | 15. (A) (B) (C) (D) |

National Science Olympiad

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International Mathematics Olympiad

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International English Olympiad

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|---------------------|---------------------|---------------------|---------------------|---------------------|
| 1. (A) (B) (C) (D) | 2. (A) (B) (C) (D) | 3. (A) (B) (C) (D) | 4. (A) (B) (C) (D) | 5. (A) (B) (C) (D) |
| 6. (A) (B) (C) (D) | 7. (A) (B) (C) (D) | 8. (A) (B) (C) (D) | 9. (A) (B) (C) (D) | 10. (A) (B) (C) (D) |
| 11. (A) (B) (C) (D) | 12. (A) (B) (C) (D) | 13. (A) (B) (C) (D) | 14. (A) (B) (C) (D) | 15. (A) (B) (C) (D) |

ANSWERS

National Cyber Olympiad			National Science Olympiad			International Mathematics Olympiad			International English Olympiad		
1. (C)	2. (C)	3. (C)	1. (D)	2. (D)	3. (B)	1. (B)	2. (C)	3. (A)	1. (D)	2. (B)	3. (C)
4. (B)	5. (D)	6. (A)	4. (A)	5. (B)	6. (B)	4. (B)	5. (B)	6. (C)	4. (C)	5. (A)	6. (B)
7. (A)	8. (D)	9. (B)	7. (D)	8. (B)	9. (A)	7. (C)	8. (C)	9. (A)	7. (B)	8. (A)	9. (C)
10. (A)	11. (B)	12. (B)	10. (C)	11. (C)	12. (A)	10. (B)	11. (A)	12. (A)	10. (C)	11. (A)	12. (C)
13. (A)	14. (C)	15. (A)	13. (A)	14. (B)	15. (D)	13. (A)	14. (B)	15. (A)	13. (B)	14. (B)	15. (A)