



**SOF INTERNATIONAL
MATHEMATICS OLYMPIAD**

SYLLABUS

Section – 1 : Verbal and Non-Verbal Reasoning.

Section – 2 : Number Systems, Polynomials, Coordinate Geometry, Linear Equations in Two Variables, Introduction to Euclid's Geometry, Lines and Angles, Triangles, Quadrilaterals, Areas of Parallelograms and Triangles, Circles, Constructions, Heron's Formula, Surface Areas and Volumes, Statistics, Probability.

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

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

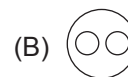
Total Questions : 50

Time : 1 hr.

PATTERN & MARKING SCHEME				
Section	(1) Logical Reasoning	(2) Mathematical Reasoning	(3) Everyday Mathematics	(4) Achievers Section
No. of Questions	15	20	10	5
Marks per Ques.	1	1	1	3

LOGICAL REASONING

1. Pointing to a woman in a photograph, a man says, "She is the grandmother of the son of my daughter-in-law's mother-in-law." How is the woman related to the man?
 (A) Mother (B) Mother-in-law
 (C) Sister (D) Wife



2. Which of the following Venn diagrams best represents the relationship amongst, 'State, Country and Village'?

3. Find the odd one out.

- (A) 18 : 108 (B) 42 : 132
 (C) 22 : 112 (D) 26 : 156

MATHEMATICAL REASONING

4. Simplify : $\frac{2}{\sqrt{5} + \sqrt{3}} + \frac{1}{\sqrt{3} + \sqrt{2}} - \frac{3}{\sqrt{5} + \sqrt{2}}$
 (A) 3 (B) 2
 (C) 4 (D) 0

- (A) 2.1 cm (B) 3.5 cm
 (C) 4.2 cm (D) 6.2 cm

5. Two metallic right circular cones having their heights 4.1 cm and 4.3 cm respectively and the radii of their bases 2.1 cm each, have been melted together and recast into a sphere. Find the diameter of the sphere.

6. Two dice are tossed. The probability that the total score is a prime number is

- (A) $\frac{1}{6}$ (B) $\frac{5}{12}$
 (C) $\frac{1}{2}$ (D) $\frac{7}{9}$

EVERYDAY MATHEMATICS

7. One-third of the boys and one-half of the girls of a college participated in a social work project. If the number of students who participated is 300 out of which 100 are boys, then what is the number of students in the college?
 (A) 500 (B) 600
 (C) 700 (D) 800

8. The population of a town is increased from 1,75,000 to 2,62,500 in a decade. The average percent increase of population per year is _____.
 (A) 4.37%
 (B) 5%
 (C) 6%
 (D) 50%

ACHIEVERS SECTION

9. Fill in the blanks and select the correct option.

(P) Any point lying on x -axis is of the form ____.

(Q) The abscissa of a point on y -axis is ____.

(R) The point at which the two coordinate axes meet is called the ____.

(S) The perpendicular distance of the point (4, 5) from x -axis is ____.

(T) The perpendicular distance of the point (3, 7) from y -axis is ____.

- | | (P) | (Q) | (R) | (S) | (T) |
|-----|------------|-----|--------|-----|-----|
| (A) | (0, y) | 1 | origin | 5 | 3 |
| (B) | (x , 0) | 0 | origin | 5 | 3 |
| (C) | (x , 0) | 0 | origin | 3 | 5 |
| (D) | (0, y) | 1 | origin | 3 | 5 |

10. Consider the following data.

x_i	12	13	14	15	16	17	18
f_i	1	3	4	8	10	3	1

Match the columns:

- | Column I | Column II |
|--|-----------|
| (i) Mean of the data is | (p) 16 |
| (ii) Median of the data is | (q) 15 |
| (iii) Mode of the data is | (r) 15.2 |
| (A) (i) \rightarrow (r), (ii) \rightarrow (q), (iii) \rightarrow (p) | |
| (B) (i) \rightarrow (r), (ii) \rightarrow (p), (iii) \rightarrow (q) | |
| (C) (i) \rightarrow (q), (ii) \rightarrow (r), (iii) \rightarrow (p) | |
| (D) None of these | |

SPACE FOR ROUGH WORK

ANSWERS

1. (A) 2. (A) 3. (D) 4. (D) 5. (C) 6. (B) 7. (C) 8. (B) 9. (B) 10. (A)