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ICO	NICO	NIMO	NBTO	IEO	IGO	BIFO	NIPO
INTERNATIONAL CYBER OLYMPIAD	NATIONAL INTERACTIVE SCIENCE OLYMPIAD	NATIONAL INTERACTIVE MATH OLYMPIAD	NATIONAL BIOTECHNOLOGY OLYMPIAD	INTERNATIONAL ENGLISH OLYMPIAD	INTERNATIONAL G.K. OLYMPIAD	BSE INTERNATIONAL FINANCE OLYMPIAD	NATIONAL IIT-PMT OLYMPIAD

Level - 1 : All Level-1 successful* participants will get certificate, apititude report and online subscription, and school toppers will be eligible for school hero medals.

Level - 2 : School toppers* will be selected for level-2-National level - online computer based interactive test held at exam centres all over India. Besides selection for level-3, winner will get merit certificate, medals, educational CDs, laptop, scholarship and other prizes. There is no level 2 in Art, Cricket, Cyber, NIPO and Biotech.

Level - 3 : Toppers will qualify# for level 3-International level-where you will compete with students globally. Get selected for EHFs International Olympiad training camp. Only Indian organization giving students exposure to global competitions. Represent India & win laurels. Guidance by top scientists. Prizes ranges from cash (millions of $), gadgets, foreign trips, publicity, fame, scholarships, Internships, conference participation and more.

* # See prospectus/website for details

EHF

NATIONAL INTERACTIVE MATHS OLYMPIAD

NIMO

9 Class

B1 Paper Code

LEVEL-1

1. **You are allowed additional 10 minutes to fill the required details in the RESPONSE SHEET (OMR).**
2. **The question paper is made as per syllabus guidelines & pattern given in the information Booklet. The Question Paper for Classes 1 to 6 contains 25 Questions each to be answered in 40 minutes. The Question paper for classes 7 to 12 contains 50 Questions each to be answered in 60 minutes. All questions are compulsory. Further instructions are given in the instruction letter to the teacher.**
3. **Use the response sheet to mark your responses by darkening the required circle. The response sheet has to be returned to the foundation, duly filled in. THE STUDENT CAN RETAIN THE QUESTION PAPER.**

MENTAL ABLITIY

1. Evaluation of $8^3 \times 8^2 \times 8^{-5}$ is _____ .

(1) 1 (2) 0

(3) 8 (4) None of these

2. A clock strikes at 1 O'Clock , twice at 2 O'Clock, thrice at 3 O'Clock and so on. How many times will it strike in 24 hours?

(1) 78 (2) 136

(3) 156 (4) None of these

3. A fraction which bears the same ratio to $\frac{1}{27}$ as $\frac{3}{11}$ bears to $\frac{5}{9}$ is equal to _____ .

(1) $\frac{1}{55}$ (2) 55

(3) $\frac{3}{11}$ (4) None of these

4. What is the symbol of pi?

(1) ∞ (2) Ω

(3) π (4) None of these

5. A cuboid has six sides of different colours. The red side is opposite to black. The blue side is adjacent to white. The brown side is adjacent to blue. The red side is face down. Which one of the following would be the opposite to brown?

(1) Red

(2) Black

(3) White

(4) None of these

6. Find the value of

$2004\ 2005 \times 2005\ 2004 - 2004\ \ 2004 \times 2005\ 2005$

(1) 10000

(2) 15000

(3) 18000

(4) None of these

7. $x^2 + 4x + 3 = 0$, then x equals

(1) 2 or 3

(2) –1 or –3

(3) 1 or 3

(4) None of these

8. The price of an item increases by 20% and then decreases by 20% so the price has

(1) Increased by 4%

(2) Decreased by 4%

(3) Increased by 0%

(4) None of these

9. What are the next three number in this sequence?

12, 9, 6, 3, ...

(1) 0, –3, –6

(2) 0, –2, –6

(3) 3, 0, –3

(4) None of these

10. A fence will be built to enclose a 100 m by 70 m field. It will need a post at each corner and one every 5 m. How many posts are needed?

(1) 68

(2) 170

(3) 340

(4) None of these

MATHEMATICS

11. What is the value of the expression $\frac{3^{9/4} \cdot 3^{3/4}}{3^3}$?

(1) 3

(2) 4

(3) 1

(4) None of these

12. Which of the following is an irrational number?

(1) $3\sqrt{2}+1$ (2) $\frac{\sqrt{32}}{\sqrt{2}}$

(3) $\frac{1}{2}$ (4) None of these

13. $\sqrt{2}$ is a polynomial of degree

(1) 2 (2) 0

(3) 1 (4) None of these

14. If $(x + 1)$ is a factor of the polynomial $2x^2 + Kx$, then the value of K is

(1) –3

(2) 4

(3) 2

(4) None of these

15. Which of the following is a zero of the polynomial

$x^3 + 3x^2 + 3x - 1$?

(1) 1

(2) 2

(3) –1

(4) None of these

16. Signs of the abscissa and ordinate of a point in **the** fourth quadrant are respectively?

(1) –, +

(2) –, –

(3) +, +

(4) None of these

17. Find the distance of point (–5, –7) from x-axis.

(1) 5

(2) 7

(3) 0

(4) None of these

18. The point at which the two coordinate axes meet is called the

(1) abscissa

(2) ordinate

(3) origin

(4) none of these

19. The perpendicular distance of the point P(3, 4) from the y-axis is

(1) 3

(2) 4

(3) 0

(4) None of these

20. Two supplementary angles differ by $18x$ degrees. If the measure of the acute angle is $6x$ degrees, find the measure of the obtuse angle.

(1) 24°

(2) 6°

(3) 144°

(4) None of these

21. The liner equation $2x - 5y = 7$ has

(1) A unique solution

(2) Two solutions

(3) Infinitely many solutions

(4) None of these

22. The point of the form $(a, -a)$ always lies on the line

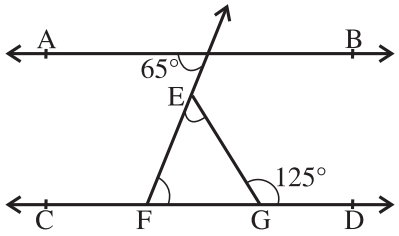
(1) $x = a$

(2) $y = -a$

(3) $x + y = o$

(4) none of these

23. In the given figure AB || CD, then the value of ∠GEF is _____ .



(1) 50°

(2) 60°

(3) 65°

(4) None of these

24. If $\angle AOC = 2x + 1°$ and $\angle COB = 5x - 3°$, find the value of x for which AOB will be a line.

(1) 26°

(2) 72°

(3) 34°

(4) None of these

25. The angles of a triangle are in the ratio 5 : 3 : 7. The triangle is

(1) An acute angled triangle

(2) An obtuse angled triangle

(3) A right triangle

(4) None of these

26. An exterior angle of a triangle is 105° and its two interior angles are equal. Each of these equal angles is

(1) 75°

(2) 37.5°

(3) 52.5°

(4) None of these

27. In a right angled triangle, if one acute angle is half the other, then the smallest angle is:

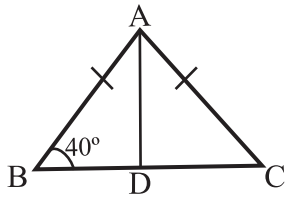
(1) 15°

(2) 25°

(3) 30°

(4) None of these

28. In the given figure, AD is the median, then ∠BAD is:



(1) 55°

(2) 50°

(3) 100°

(4) None of these

29. Which of the following quadrilaterals is a regular polygon?

(1) Trapezium (2) Rhombus

(3) Square (4) None of these

30. The quadrilateral formed by joining the mid- points of the sides of a quadrilateral PQRS, taken in order, is a rhombus, if

(1) PQRS is a rhombus

(2) PQRS is a parallelogram

(3) Diagonals of PQRS are equal

(4) None of these

31. Can 80°, 75°, and 20° form a triangle?

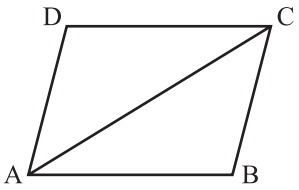
(1) Yes

(2) No

(3) Sometimes

(4) None of these

32. In the accompanying diagram of rhombus ABCD, m ∠CAB = 35. Find m ∠CDA.



(1) 35

(2) 70

(3) 110

(4) None of these

33. Adjacent angles of a parallelogram are in the ratio 5 : 7. Larger angle of parallelogram is equal to largest angle of a triangle. Smallest angle of the triangle is 40° less than smaller angle of the parallelogram. What is the measure of second largest angle of the triangle?

(1) 30°

(2) 40°

(3) 55°

(4) None of these

34. AD is a diameter of a circle and AB is a chord. If AD = 34 cm, AB = 30 cm, the distance of AB from the centre of the circle is:

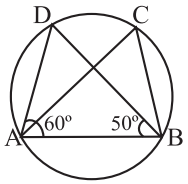
(1) 8 cm

(2) 4 cm

(3) 15 cm

(4) None of these

35. In figure, if ∠DAB = 60°, ∠ABD = 50°, then ∠ACB is equal to:



(1) 60°

(2) 50°

(3) 70°

(4) None of these

36. In a frequency distribution, the mid value of a class is 10 and the width of the class is 6. The lower limit of the class is:

(1) 6

(2) 7

(3) 8

(4) None of these

37. The mean of five numbers is 30. If one number is excluded, their mean becomes 28. The excluded number is:

(1) 28

(2) 30

(3) 38

(4) None of these

80 bulbs are selected at random from a lot and their lifetime (in hrs) is recorded in the form of a frequency table given below:

Life Time (in hrs)	300	500	700	900	1100
Frequency	10	12	23	25	10

See the table and answer Q. No. 38 and 39

38. One bulb is selected at random from the lot. The probability that its life is 1150 hours is

(1) 1/80

(2) 7/16

(3) 0

(4) None of these

39. The probability that bulbs selected randomly from the lot has life less than 900 hrs is:

(1) 9/16

(2) 5/16

(3) 7/16

(4) None of these

40. The length of each side of an equilateral triangle having an area of $4\sqrt{3}$ cm^2, is

(1) $\frac{4}{\sqrt{3}}$ cm

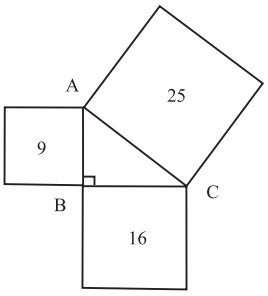
(2) $\frac{\sqrt{3}}{4}$ cm

(3) 4 cm

(4) None of these

INTERACTIVE SECTION

41. The diagram shows a dart board. What is the least number of throws needed in order to get a score exactly 100?



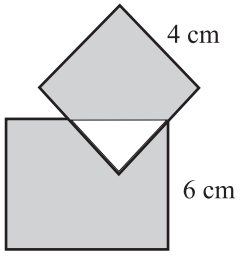
(1) 2

(2) 3

(3) 4

(4) None of these

42. Two squares, with lengths 4 cm and 6 cm respectively, are partially overlapped as shown in the figure. What is the difference between shaded area of the small square and shaded area of the big square?



(1) 16 cm^2 (2) 20 cm^2

(3) 26 cm^2 (4) None of these

43. If the base of the triangle is increased by 10% while its height decreased by 10% , find the area of the new triangle as a percentage of the original one.

(1) 80% (2) 120%

(3) 87% (4) None of these

44. Use counters to add – 4 + 6

You start with: 

You add : 

Which counters show the sum?

(1) 

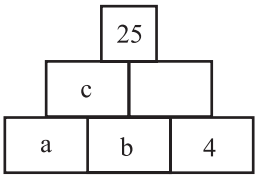
(2) 

(3) 

(4) None of these

45. The game Pyramaths works as follows:

2 adjoining block's sum is equal to the block above the 2 adjoining blocks. for eg. $a + b = c$



If the sum of the numbers in row 3 is 17, then the value of a is

(1) 2 (2) 3

(3) 5 (4) None of these

46. The heights of all students in grade 9 are arranged from least to greatest. Which statistical measure separates the top half of this set of data from the bottom half?

(1) Mean (2) Median

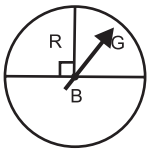
(3) Mode (4) None of these

47. Mihika has grades of 84, 65, and 76 on three math tests. What grade must he obtain on the next test to have an average of exactly 80 for the four tests?

(1) 85 (2) 90

(3) 95 (4) None of these

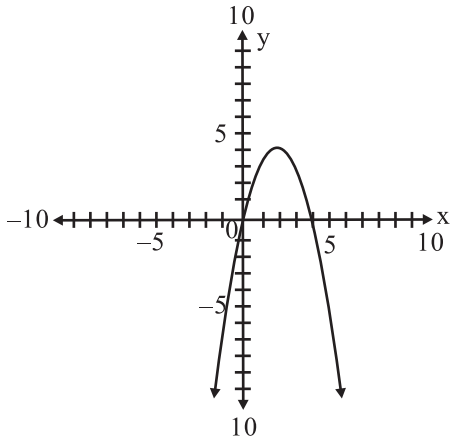
48. At a school fair, the spinner represented in the accompanying diagram is spun twice. What is the probability that it will land in section G the first time and then in section B the second time?



(1) $\frac{1}{2}$ (2) $\frac{1}{4}$

(3) $\frac{1}{8}$ (4) None of these

49. Look at this graph:



What is the y-intercept?

(1) 0

(2) 4

(3) – 4

(4) None of these

50. A clock reads 4:30. If the minute hand points East, in what direction will the hour hand point?

(1) North-West

(2) North-East

(3) South-East

(4) None of these

END OF THE EXAM