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Level - 1 : All Level-1 successful* participants will get certificate, aptitude 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 G.K. and Biotech.

Level - 3 : Toppers will qualify# for level 3-International level-where you will compete with students globally. Get selected for EHF's 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. Level 3 is in Maths, Science & Cyber only.

*# See prospectus/website for details

1. You are allowed additional 10 minutes to fill the required details in the **RESPONSE SHEET (OMR)**. **STUDENTS OF CLASS 1 & 2 HAVE TO UNDERLINE** THE CORRECT ANSWER IN THE QUESTION PAPER ITSELF. THEY ARE NOT REQUIRED TO USE THE RESPONSE SHEET (OMR). THEY HAVE TO FILL THEIR NAME, ROLL NUMBER, CLASS, SCHOOL NAME IN THE SPACE PROVIDED IN THE QUESTION PAPER.
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 except for classes 1 and 2.

NATIONAL INTERACTIVE MATHS OLYMPIAD

NIMO

7 Class **A1 Paper Code**

LEVEL - 1

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MENTAL ABILITY

1. The given statement represents, which of the following property of multiplication

$$5 * \frac{1}{5} = 1$$

- (1) Multiplicative inverse
 - (2) Associativity
 - (3) Commutativity
 - (4) Multiplicative identity
2. Which of the following has the same value as $8^{10} \times 8^{-9}$?

- (1) 8
- (2) 8^9
- (3) 8^2
- (4) 8^{19}

3. Which of the following statements is incorrect?

- (1) A rational number is of the form $\frac{x}{y}$, where x and y are integers and $y \neq 0$.
- (2) The product of two negative rational number is negative rational number.
- (3) There are infinite rational numbers between any two rational numbers.
- (4) All integers and fractions are rational numbers.

4. The value of $1 + \frac{1}{1 + \frac{1}{1 + \frac{1}{7}}}$ is

- (1) $\frac{23}{15}$
- (2) $\frac{8}{7}$
- (3) $\frac{15}{8}$
- (4) 1

5. $\left\{6^{-1} + \left(\frac{3}{2}\right)^{-1}\right\}^{-1} = ?$

- (1) $\frac{3}{2}$ (2) $\frac{1}{2}$
 (3) $\frac{6}{5}$ (4) None of these

6. The value of x so that

$$\left(\frac{8}{5}\right)^4 * \left(\frac{8}{5}\right)^3 = \left(\frac{8}{5}\right)^{2x-1}$$

- (1) 1 (2) 4
 (3) 2 (4) 3

7. The value of A such that $\frac{7}{8}$ and $\frac{A}{-32}$ are equivalent rational numbers is

- (1) 4 (2) -14
 (3) -28 (4) 28

8. Ratio 1m 5cm : 63cm in its simplest form is

- (1) $\frac{5}{3}$ (2) $\frac{3}{5}$
 (3) $\frac{3}{7}$ (4) $\frac{7}{3}$

9. Atul purchased four and a half dozen eggs at ₹162. So how much money he needs to purchase 2 dozen of eggs ?

- (1) 50 (2) 104
 (3) 72 (4) 96

10. 2 numbers are in the ratio of 7:11. If 7 is added to each of the numbers, the ratio becomes 2:3. Find the numbers.

- (1) 49 and 76
 (2) 49 and 77
 (3) 47 and 77
 (4) None of these

11. Each member of Avinash's family had one pizza for lunch. Each pizza costs ₹135. What else do you need to know to find out how much the family spent on lunch ?

- (1) The price of hamburger ?
 (2) How many people are there in the family ?
 (3) Which family member paid for lunch ?
 (4) How much money Avinash's father had in his wallet ?

12. The LCM of two number is 238 and the numbers are 17 and 14, then their HCF is-

- (1) 1 (2) 17
 (3) 432 (4) 14

13. Which of the following number is divisible by 45 ?

- (1) 32424 (2) 444195
 (3) 65892 (4) None of these

14. Which amongst the following is an acute angle ?

- (1) Angles measuring more than 90 degree
 (2) Angles measuring less than 90 degree
 (3) Angles measuring exact 90 degree
 (4) None of these

15. Diameter of a circle is $\frac{2}{\pi}$ units.

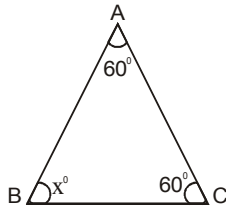
Then its area is (in square units)

- (1) $\frac{4}{\pi^2}$ (2) $\frac{2}{\pi^2}$
 (3) $\frac{1}{\pi}$ (4) 1

16. Which term refers to the end point of two rays forming an angle ?

- (1) Bisector
 (2) Vertex
 (3) Degrees
 (4) None of these

17. In the figure, measure of $\angle x$ is :



- (1) 60° (2) 70°
 (3) 80° (4) None of these

18. The missing value in the box, if

$$(24) \div (-2) = 9 + \square \times (-3) \text{ is}$$

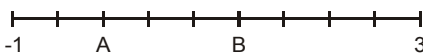
- (1) -12 (2) 4
 (3) -6 (4) 7

19. What is the value of the expression

$$[18 - (-7) + (-2) - (+8)] ?$$

- (1) -18 (2) -15
 (3) 15 (4) 18

20. A number line from -1 to 3 is divided into nine equal segments. What fraction points A and B?



- (1) $\frac{4}{9}, \frac{16}{9}$ (2) $\frac{8}{9}, \frac{32}{9}$
 (3) $\frac{14}{9}, \frac{20}{9}$ (4) $\frac{2}{9}, \frac{5}{9}$

21. The scientific notation of 0.000076 is

- (1) 7.6×10^{-5} (2) 7.6×10^5
 (3) 0.0076×10^4 (4) None of these

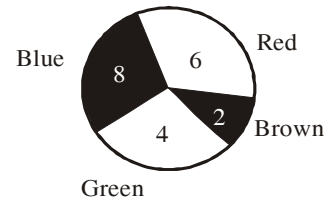
22. The given table lists the weights of four students Nitish, Akaash, Kapil and Aradhna.

Students	Weight
Nitish	30 kg
Akaash	31 kg
Kapil	42 kg
Aradhna	23 kg

Amongst them, who weighs the maximum ?

- (1) Nitish (2) Akaash
 (3) Kapil (4) Aradhna

23. You ask 20 of your friends what their favourite colour is? The circle graph below shows how many friends picked each colour. What percent of your friends picked red?



- (1) 15% (2) 20%
 (3) 30% (4) None of these

24. A hexagonal field of sides 20m, 14m, 10m, 28m, 37m and 19m is to be fenced on all sides with three rounds of wire. If the wire costs ₹7 per m, then what is the total cost of fencing the field?

- (1) ₹2688 (2) ₹1054
 (3) ₹2568 (4) ₹3701

25. In the expression $a + b + bc$, the variables are

- (1) a and b (2) a and bc
 (3) a, b and c (4) None of these

26. Which algebraic expression **correctly** represents the statement the square of the product of numbers x and y subtracted from the sum of their squares?

- (1) $x^2 + y^2 - x^2y^2$ (2) $x^2y^2 - (x^2 + y^2)$
 (3) $(x + y)^2 - x^2y^2$ (4) $x^2y^2 - (x + y)^2$

27. What is the sum of the expressions $(5x^2 + 7x^2y + 7xyz)$, $(3y^2 - 5yzx + 2yx^2)$ and $(-4y^2 + z^2 + 4zxy - 4x^2y)$?

- (1) $x^2 + 6x^2y - 5xyz + y^2 - z^2$
 (2) $x^2 - 4x^2y + 3xyz + y^2 + z^2$
 (3) $5x^2 + 5x^2y + 6xyz - y^2 + z^2$
 (4) $4x^2 + 3x^2y - 7xyz + y^2 - z^2$

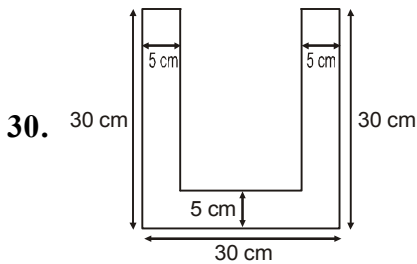
28. If $\left(a - \frac{1}{a}\right) = 5$, then the value $a^2 + \frac{1}{a^2}$ is :

- (1) 20 (2) 27
 (3) 21 (4) 23

29. A farmer has a 55 m long rectangular field that has an area of 1650m^2 . To prevent stray animals from entering his field, he wants to fence the field with two rounds of barbed wire, which costs Rs. 5 per metre.

How much does the farmer need to spend on the barbed wire in order to fence his field?

- (1) Rs. 1,500 (2) Rs. 1,600
(3) Rs. 1,700 (4) Rs. 1,800



What is the area of the given figure?

- (1) 420 cm^2 (2) 410 cm^2
(3) 400 cm^2 (4) 390 cm^2

31. If $8^{x-1} = 2^{x+3}$, then x is

- (1) 2 (2) 1
(3) 0 (4) 3

32. Cube of $\left(-\frac{1}{27}\right)$ is.....

- (1) $\frac{-1}{19683}$ (2) $\frac{1}{963}$
(3) $\frac{1}{850}$ (4) None of these

33. The value of $\left(\frac{32}{243}\right)^{-3/5}$ is

- (1) $\frac{27}{8}$ (2) $\frac{21}{8}$
(3) $\frac{27}{11}$ (4) None of these

34. When 8 is added to two fifth of a number, it gives 30.

If x is the number, which equation represents the given situation?

- (1) $8 + \frac{2}{5}x = 30$ (2) $8x + \frac{2}{5} = 30$
(3) $5 + \frac{2x}{8} = 30$ (4) None of these

35. Rohan and Sohan are two friends. Rohan has ₹12 less than twice the amount of money that Sohan has. If Sohan has ₹ p and Rohan has ₹21, then which equation represents the given situation?

- (1) $p + 21 = 2 \times 12$
(2) $2p + 12 = 21$
(3) $p - 21 = 2 \times 12$
(4) $2p - 12 = 21$

36. In an ODI cricket match between India and Pakistan. India scored 20 runs more than six-fifth the runs scored by Pakistan.

If India had scored 290 runs, India won the match by how many runs?

- (1) 60 (2) 65
(3) 70 (4) 75

37. The marks (out of 25) obtained by students of a certain class are 11, 12, 14, 13, 17, 11, 12, 12, 17, 21, 24, 14, 11, 13, 12, 17, 21, 19, 19, 24, 14, 15, 12, 17, 15, 19, 21, 13, 16 and 15.

What is the mode of marks obtained by students of the class?

- (1) 12 (2) 13
(3) 14 (4) 15

38. The mean of 5 observations is 15. If mean of the first three observations is 14 and that of the last three is 17, then the third observation is

- (1) 15 (2) 16
(3) 18 (4) 17

39. What is the value of the expression $\left[-\frac{8}{9} \times (-7) \times \frac{27}{70}\right]$?

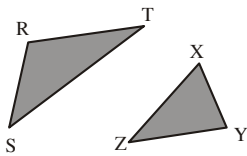
- (1) $\frac{11}{15}$ (2) $\frac{17}{21}$
(3) $\frac{12}{5}$ (4) $\frac{19}{37}$

40. Rita's height is $5\frac{1}{4}$ feet. If her sister Gita is $5\frac{1}{3}$ feet tall, then what is the difference between their heights?

- (1) $\frac{1}{11}$ feet (2) $\frac{1}{6}$ feet
 (3) $\frac{1}{7}$ feet (4) $\frac{1}{12}$ feet

EtG INTERACTIVE SECTION

41. Triangle RST is similar to triangle XYZ

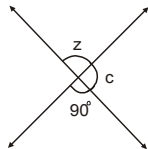


\overline{RS} corresponds to which side of triangle XYZ?

- (1) \overline{XZ} (2) \overline{YZ}
 (3) \overline{XY} (4) None of these

42. In the given figure, measure of $\angle C$ and $\angle Z$ are

- (1) $\angle Z = 90^\circ$, $\angle C = 60^\circ$
 (2) $\angle Z = 90^\circ$, $\angle C = 30^\circ$
 (3) $\angle Z = 90^\circ$, $\angle C = 90^\circ$
 (4) $\angle Z = 90^\circ$, $\angle C = 180^\circ$



43. A dice is rolled once. The probability of getting an odd prime number is

- (1) $\frac{1}{6}$ (2) $\frac{5}{36}$
 (3) $\frac{2}{6}$ (4) $\frac{7}{6}$

44. The distance covered by 8 participants in an interschool long jump competition are 7.1, 1.2, 9.4, 3.0, 7.7, 2.8, 4.1, 5.66. What is the mean distance covered by the participants ?

- (1) 5.10 (2) 5.08
 (3) 5.12 (4) 5.16

45. The values of x and y in the box are

$$\frac{15}{18} = \frac{5}{x} = \frac{y}{12}$$

- (1) 6, 10 (2) 7, 10
 (3) 6, 9 (4) None of these

46. $0.71 \times 0.005 \times 0.04$ is equal to

- (1) 1.42×10^{-4} (2) 1.53×10^{-9}
 (3) 14.2×10^{-7} (4) 0.14×10^{-4}

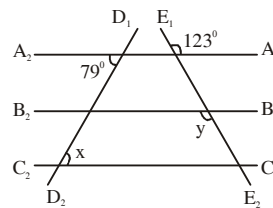
47. If + means \times , - means +, and \div means -, then the value of $7 + 4 - 3 \div 17 + (\div 1)$

- (1) -17 (2) 57
 (3) 23 (4) 48

48. The two consecutive prime numbers with difference 2 are called

- (1) Co-primes (2) Twin primes
 (3) Composites (4) Evens

49. In the given figure, $A_1A_2 \parallel B_1B_2$ and $B_1B_2 \parallel C_1C_2$.



What is the measure of the given angle x and y?

- (1) 79° and 123° (2) 101° and 57°
 (3) 79° and 57° (4) 101° and 123°

50. Last year, the price of petrol was ₹45 per litre. Recently, the government increased the price of petrol to ₹50 per litre.

What was the percentage increase in the price of petrol?

- (1) $6\frac{2}{3}\%$ (2) $7\frac{9}{13}\%$
 (3) $11\frac{1}{9}\%$ (4) $14\frac{2}{7}\%$

