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NATIONAL INTERACTIVE MATHS OLYMPIAD

NIMO

8 Class **A1 Paper Code**

L E V E L - 1

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.

MENTAL ABILITY

1. Which of the following has the same value as $9^{10} \times 9^{-8}$?

(1) 9 (2) 9^2

(3) 9^3 (4) 9^{-2}

2. Which of the following statement is incorrect?

(1) Multiplicative inverse of negative rational number is negative

(2) All real numbers are rational

(3) 0 is the additive identity for integers as well as for rational

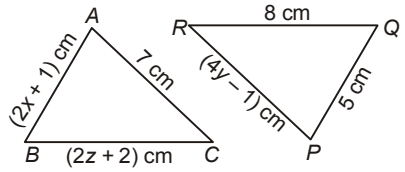
(4) All of the above

3. The zero of the polynomial $\frac{7}{15}a + 1\frac{4}{7}$, is

(1) $\frac{-165}{49}$ (2) $\frac{11}{15}$

(3) $\frac{49}{165}$ (4) None of these

4. In the given figure, ΔABC is congruent to ΔPQR.



What is the value of $(x + 2y + 3z)$?

(1) 7 (2) 9

(3) 13 (4) 15

5. The difference between the largest and the smallest of the fractions $\frac{10}{3}, \frac{7}{11}, \frac{2}{5}, \frac{5}{12}, \frac{1}{8}$ is

(1) $\frac{25}{12}$ (2) $\frac{11}{40}$

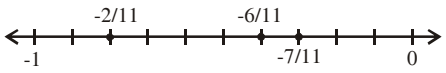
(3) $\frac{13}{55}$ (4) $\frac{77}{24}$

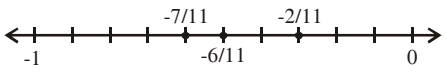
6. What is the multiplicative inverse of $6\frac{3}{4}$?

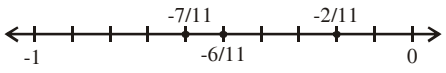
(1) $\frac{4}{25}$ (2) $\frac{4}{27}$

(3) $\frac{4}{26}$ (4) $\frac{5}{27}$

7. Which number line correctly shows the rational numbers $\frac{-6}{11}, \frac{-7}{11}$ and $\frac{-2}{11}$?

(1) 

(2) 

(3) 

(4) None of these

8. A polygon, whose measure of all angles are more than 90^o is

(1) Triangle (2) Square
(3) Pentagone (4) Trapezium

9. $9\frac{3}{4}+11\frac{1}{2}+8\frac{1}{4}$ equals

(1) 28.5 (2) 27.5
(3) 30.5 (4) 29.5

10. $\frac{-3}{7}$ lies

(1) Between -1 and 0
(2) To the right of 0 on the number line
(3) Doesn't lies on the number line
(4) All of above

MATHEMATICS

11. In a computer lab, there are 3 computers for every 6 students. How many computer will be needed for 24 students?

(1) 13 computers (2) 72 computers
(3) 12 computers (4) 14 computers

12. The area of three squares are given below-

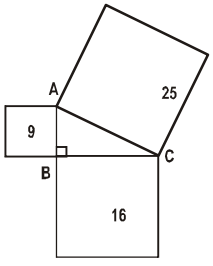
Find the perimeter of $\triangle ABC$

(1) 12 units

(2) 12.5 units

(3) 19.5 units

(4) 20 units



13. If a triangle has sides of lengths 3 inches, 4 inches, and 6 inches, it is which type of triangle?

(1) Right (2) Scalene
(3) Isosceles (4) Equilateral

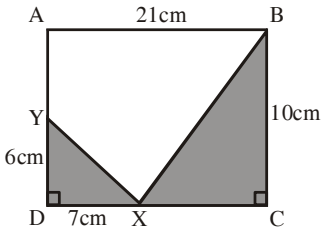
14. If a triangle has two angles that measure 70°and 70°, what type of triangle is this?

(1) Obtuse (2) Acute
(3) Right (4) Isosceles

15. A STOP sign has eight sides and is called

(1) A quadrilateral (2) A hexagon
(3) An octagon (4) A pentagon

16. The given figure shows a rectangle ABCD. Line segments XY and XB are then drawn inside the rectangle. What is the area of the shaded region in the given figure?



(1) $77\ cm^2$ (2) $210\ cm^2$
(3) $91\ cm^2$ (4) $119\ cm^2$

17. Which statement correctly represents the equation $\frac{5}{3}(q+9)=12$?

(1) The product of $\frac{5}{3}$ and 9 more than q equals 12.

(2) Five-Third of the product of q and 9 equals 12.
(3) The sum of Five-third of q and 9 equals 12
(4) Five-third the sum of q and 9 equals 12.

18. What is the value of y for the equation $\frac{5}{2}(y+1)+4=24$?

(1) 5 (2) 6
(3) 7 (4) 9

19. Which expression would be added to $(-12x^2+14y^2+6xy^2+48x^2y)$ to obtain $(17x^2y-2x^2-6y^2+15xy^2)$?

(1) $10x^2-20y^2+9xy^2-31x^2y$
(2) $17x^2+10y^2+9xy^2+30x^2y$
(3) $10x^2-15y^2+9xy^2+15x^2y$
(4) $7x^2+17y^2+27xy^2-x^2y$

20. Which expression is obtained upon subtracting the sum of $(2x^3+7x^2+4x)$ and $(2x^3-4x^2-5x+7)$ from the sum of $(-x^3+7x+6)$ and $(3x^3-5x^2-11x-3)$?

(1) $2x^3+8x^2+3x+4$
(2) $-2x^3-8x^2-5x-4$
(3) $6x^3-2x^2-5x+10$
(4) $-6x^3+2x^2+5x-10$

21. The value of the expression

$\left(3\frac{2}{6}+\frac{4}{9}\right)$ *is*

(1) $\frac{19}{2}$ (2) $\frac{34}{9}$

(3) $\frac{17}{7}$ (4) None of these

22. What is the value of the expression $(101.3 \times 0.3 \times 0.0015)$?

(1) 0.004508 (2) 0.000721

(3) 0.045585 (4) None of these

23. A group of friends went to a restaurant for lunch, where 8 of them ordered Chinese and rest of 20% ordered Indian. How many friends went to the restaurant?

(1) 2 (2) 6 (3) 4 (4) 10

24. The number 80 is __ % of 200?

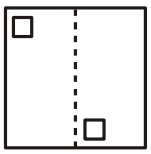
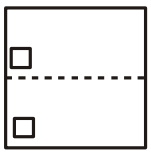
(1) 40% (2) 20%

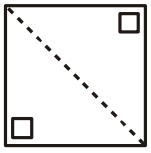
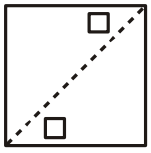
(3) 30% (4) 50%

25. If 45 candies were distributed among Amit, Arun and Anup in the ratio of 2 : 3 : 4, then how many candies did Arun get?

(1) 20 (2) 15 (3) 10 (4) 5

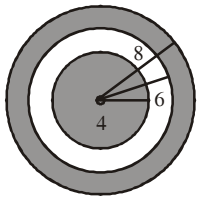
26. In which of the following figures does the dotted line represent the line of symmetry?

(1)  (2) 

(3)  (4) 

27. The given figure shows three concentric circles.

What is the area of the shaded region in the given figure?



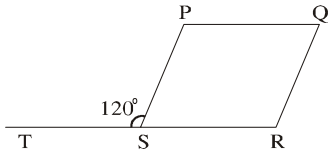
(1) 44π

(2) 54π

(3) 36π

(4) 64π

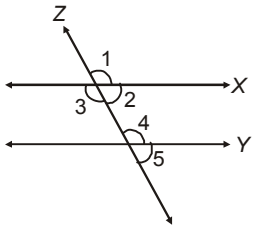
28. In the given figure, side RS of parallelogram PQRS is produced to point T. What is the measure of $\angle PQR$.



(1) 50^o (2) 120^o

(3) 180^o (4) 90^o

29. In the given figure, lines *X* and *Y* are cut by a transversal *Z*.



In the given figure, lines *X* and *Y* are parallel if

(1) $\angle 1 = \angle 5$

(2) $\angle 2 = \angle 5$

(3) $\angle 2 = \angle 3$

(4) $\angle 4 = \angle 5$

30. Which of the following statement is correct?

(1) Sum of an obtuse angle and an acute angle can be complementary.

(2) Sum of two acute angles can be supplementary.

(3) Sum of an obtuse angle and an acute angle can be supplementary.

(4) Sum of two obtuse angles can be complementary.

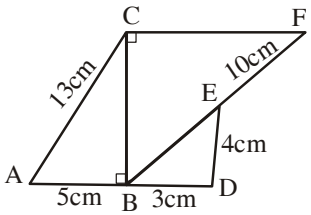
31. What is the perimeter of the given figure?

(1) 89cm

(2) 102cm

(3) 61cm

(4) 58cm



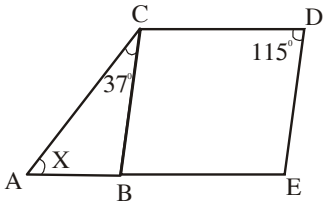
32. What is the value of 'X' in the given figure?

(1) 150^o

(2) 28^o

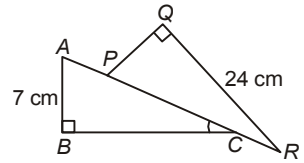
(3) 156^o

(4) 85^o



33. In the given figure,

$\triangle ABC$ is congruent to $\triangle PQR$.

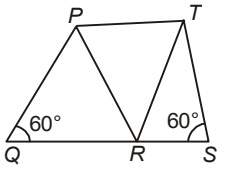


If $PC = 20$ cm, then what is the length of AR?

(1) 20 cm (2) 30 cm (3) 40 cm (4) 50 cm

34. In the given figure PQ = RS and QR = ST

What type of a triangle is $\triangle$ PRT ?



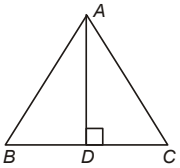
(1) Equilateral triangle

(2) Isosceles

(3) Both (1) and (2)

(4) None of these

35. Which of the following statement is true about the given diagram?



(1) $\triangle$ ABC is isosceles, if AB $\neq$ BC $\neq$ CA.

(2) $\triangle$ ABD $\cong$ $\triangle$ ACD, if BD=1/2BC and $\angle$ABD=$\angle$ACD.

(3) $(\angle ABD + \angle BAD + ADB) < (\angle ABC + \angle BAC + ACD)$

(4) None of these

36. Roman numeral for 498, is

(1) CDCXVIII (2) CDCXIV
(3) CDXCVIII (4) CDXCVII

37. If $p : q :: r : s$, then the correct statement is

(1) $qr = ps$ (2) $pqr = s$
(3) $qrs = p$ (4) None of these

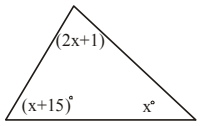
38. When a number X is subtracted from five seventh of 35, the result obtained is -6. What is the value of X?

(1) -18 (2) 19 (3) 27 (4) -31

39. Which event has a probability less than zero?

(1) Choosing a pair of parallel lines that have equal slopes
(2) Choosing a pair of congruent triangles, having one right angle in each
(3) An alphabet has been choosen randomly, its a vowel
(4) Its impossible

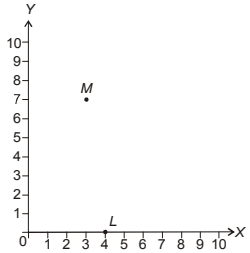
40. What is the measure of the largest angle in the accompanying triangle?

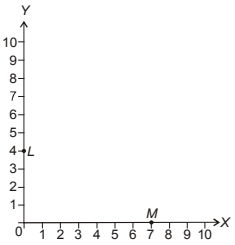


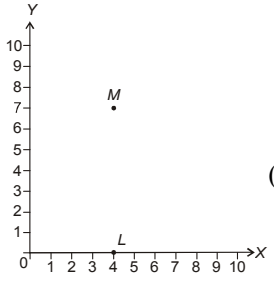
(1) 41 (2) 83
(3) 46.5 (4) None of these

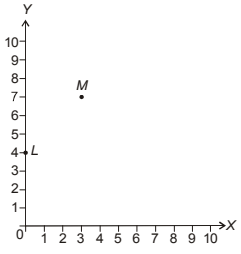
INTERACTIVE SECTION

41. Which graph correctly shows the points $L(4, 0)$ and $M(3, 7)$?

(1)


(2)


(3)


(4)


42. Factorize $a^4b - ab^4$

(1) $ab(a^3 + b^3)$ (2) $ab(a - b)(a^2 + ab + b^2)$
(3) $ab(a + b)(a^2 - ab + b^2)$ (4) $ab(a^2 - b^2)$

43. In area of a triangle formed by the points (1,0) (1,2) and the origin is

(1) 1 sq. unit (2) 2 sq. unit
(3) 3 sq. unit (4) 4 sq. unit

44. If x and y are the smallest digits in the numbers $311x2$ and $42y5$ such that they are divisible by 7, then what is difference between x and y?

(1) 1 (2) 3
(3) 7 (4) 8

45. The product of a two digit number with a number is given as

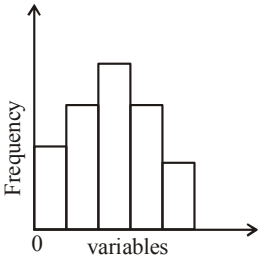
$$\begin{array}{r} 7\,A \\ \times\,6 \\ \hline B\,6\,A \end{array}$$

Here, A and B are single digit numbers.
If $A \neq B$, then what is the value of $(A^2 + B^2 - AB)$?

(1) 40 (2) 48
(3) 60 (4) 55

46. The graph which is shown is a

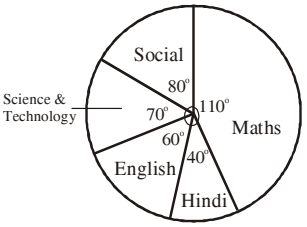
(1) Pictograph
(2) Bar-graph
(3) Histogram
(4) Pie-Chart



47. What is the probability of getting atleast one tail when two coins are tossed at the same time together?

(1) $\frac{1}{3}$ (2) $\frac{1}{2}$ (3) $\frac{2}{3}$ (4) $\frac{3}{4}$

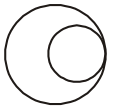
48. A survey is conducted on a school, to know the subject students like to study most during their study time. The findings of the survey are represented by the given pie-chart.



If there are 720 students in the school, then what is the difference between the number of students likes the most preferred subject, while study and by the least preferred subject?

(1) 155 (2) 85
(3) 140 (4) 120

49. In the figure the diameter of the smaller circle is the radius of the bigger circle. The ratio of the area of the bigger circle to the area of the smaller circle equals



(1) $\pi : 2\pi$ (2) 3 : 2
(3) 4 : 1 (4) None of these

50. The cube root of 0.006859 is

(1) 0.019 (2) 1.9
(3) 0.19 (4) None of these

END OF THE EXAM