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NATIONAL INTERACTIVE MATHS OLYMPIAD

NIMO

9 Class **B1 Paper Code**

IMPORTANT INFORMATION

1. You are allowed additional 10 minutes to fill the required details in the **RESPONSE SHEET.**
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 coordinator 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 ABILITY

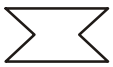
1. It takes an hour for a saree to dry in sunlight. In how much time can 25 sarees dry in the same sunlight?
(1) 1 hour (2) 12 hours
(3) 6 hours (4) None of these

2. Find the next option in the sequence given.

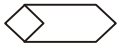
(1)  (2) 

(3)  (4) None of these

3. You are given a figure (X) followed by three figures (1), (2) and (3) such that (X) is embedded in one of them. Trace out the correct alternative.



(X)

(1)  (2) 

(3)  (4) None of these

4. A train takes 5 seconds to pass an electric pole. If the length of the train is 120 metres, the time taken by it to cross a railway platform 180 metres long, is :
(1) $12\frac{1}{2}$ seconds (2) $7\frac{1}{2}$ seconds
(3) $6\frac{1}{2}$ seconds (4) None of these

5. A class starts at 10 A. M. and lasts till 1.27 P.M. Four periods are held during this interval. After every period, 5 minutes are given free to the students. The exact duration of each period is :
(1) 42 minutes (2) 48 minutes
(3) 51 minutes (4) None of these

6. One litre of water weighs 1 kg. How many cubic millimeters of water will weigh 0.1 gram?
(1) 10 (2) 100
(3) 0.1 (4) None of these

7. Which number fits into the empty box?

5	6	8	→	4	5	7	→	3	4	6	
12	20	36		11	19	35		10	18		

(1) 32 (2) 34
(3) 30 (4) None of these

8. Which number follows next?

(1) 21 (2) 23
(3) 24 (4) None of these

9. Which number continues the sequence?

1, 5, 13, 29, ☐

(1) 65 (2) 60
(3) 61 (4) None of these

10. Pointing to a man in a photograph, a woman said, "His brother's father is the only son of my grandfather." How is the woman related to the man in the photograph?
(1) Mother (2) Aunt
(3) Sister (4) None of these

MATHEMATICS

11. Find x

$$\left(-\frac{2}{3}\right)^4 \div \left(-\frac{2}{3}\right)^{-3} = \left(-\frac{3}{2}\right)^x$$

(1) –7 (2) 7
(3) 1 (4) None of these

12. $\left(x^2 - y^2\right)\left(4x^3 - y^3\right)$

(1) $4x^5 - x^2y^3 - 4x^3y^2 + y^5$

(2) $4x^5 + x^2y^3 - 4x^3y^2 + y^5$

(3) $4x^5 - x^2y^3 + 4x^3y^2 + y^5$

(4) None of these

13. Ashna read 0.25 part of a book on the first day, 0.35 part on the second day, and 160 pages to finish reading the book, on the third day. How many pages were there in the book?
(1) 300 (2) 400
(3) 800 (4) None of these

14. Find x so that $\left(\frac{2}{3}\right)^{-5} \times \left(\frac{2}{3}\right)^{-11} = \left(\frac{2}{3}\right)^{8x}$

(1) 2 (2) –2
(3) 4 (4) None of these

15. A cubical box of volume 13,824 cubic cm is put in a cubical room of side 2.4 m. How many such boxes can be put in the room?
(1) 2000 (2) 1000
(3) 100 (4) None of these

16. What is remainder when $\left(14x^2 - 29xy - 18y^2\right) \div \left(2x - 5y\right)$

(1) $2x + 5y$ (2) $3y^2$

(3) $-3y^2$ (4) None of these

17. Compound Interest $= P\left(1 + \frac{r}{100}\right)^t - x$

What is x :
(1) t(time) (2) P(Principal)
(3) r(rate) (4) None of these

For the next two questions :

At a birthday party out of 53 children, 8 children have neither ice cream nor cold drink. If 30 children have ice cream and 23 children have cold drinks, find :

18. How many children have only ice cream?
(1) 20 (2) 22
(3) 18 (4) None of these

19. How many children have only cold drinks?
(1) 15 (2) 20
(3) 16 (4) None of these

20. $6\sqrt{24} \div 2\sqrt{6} =$

(1) $6\sqrt{12}$ (2) 6

(3) $3\sqrt{3}$ (4) None of these

21. $\frac{7}{\sqrt{5} - \sqrt{3}} =$

(1) $\frac{\sqrt{5} + \sqrt{3}}{2}$ (2) $\frac{7\sqrt{5} + 7\sqrt{3}}{2}$

(3) $\frac{7\sqrt{5} - 7\sqrt{3}}{2}$ (4) None of these

22. In a village consisting of 150 females and 100 males, $\frac{1}{15}$ of all females and $\frac{1}{10}$ of all males are graduates. What fraction of all the villagers are graduates?

(1) $\frac{3}{25}$ (2) $\frac{2}{25}$

(3) $\frac{4}{25}$ (4) None of these

23. 10% of a cold drink is orange concentrate while the rest is water. If there is 304 ml more of water than orange concentrate, find the volume of the cold drink.
(1) 380 ml (2) 304 ml
(3) 330 ml (4) None of these

24. The price of onions rises 25% and then falls 25%. What is the net rise or fall percent in the price of onions?
(1) 6.25% rise (2) 6.25% fall
(3) 62.5% fall (4) None of these

25. If a plastic chair is being sold at a 35% profit for Rs 202.50, at what price had it been bought?
(1) 150 Rs (2) 200 Rs
(3) 100 Rs (4) None of these

26. If 24 pears cost Rs 163.20, how much would 18 pears cost?
(1) Rs. 132.40 (2) Rs. 102.40
(3) Rs. 122.40 (4) None of these

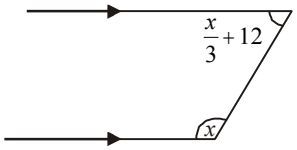
27. A 9 m long bus goes past a lamp-post in 1.2 seconds. At what speed was the bus travelling?
(1) 22 km/hr (2) 30 km/hr
(3) 27 km/ hr (4) None of these

28. Given that x + y = 13 and xy = 40, find the value of x – y.
(1) 6 (2) 3
(3) 9 (4) None of these

29. The sum of the two digits of a 2-digit number is 7. When the digits are reversed, the number increases by 27. Find the original number.
(1) 52 (2) 25
(3) 50 (4) None of these

30. Which of the following quadratic equations have roots 2 and –4.
(1) $x^2 - 2x + 8 = 0$ (2) $x^2 - 2x - 8 = 0$
(3) $x^2 + 2x - 8 = 0$ (4) None of these

31. Find the value of x

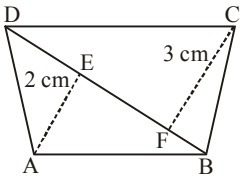


(1) 63° (2) 126°
(3) 185° (4) None of these

32. The value of $(x+3)^3 - (x-3)^3$ is
(1) $18x^2 + 54$ (2) $1 - x^3$
(3) $3x^2 - 5$ (4) None of these

33. The value of x, for which $ax^2 - c = 0$. Choose the best option.
(1) $\pm\frac{\sqrt{c}}{\sqrt{a}}$ (2) $\pm\frac{\sqrt{a}}{\sqrt{c}}$
(3) Both (1) & (2) (4) None of these

34. Total area of quadrilateral $ABCD$ is 20 cm^2 and offsets on BD are 2 cm and 3 cm. The length of BD is



(1) 5 cm (2) 6 cm
(3) 8 cm (4) None of these

35. $\frac{58^2 - 42^2}{16} =$
(1) 90 (2) 100
(3) 1 (4) None of these

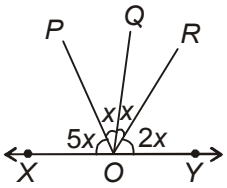
36. What is the simplified form of the expression $\frac{\left(3^{\frac{1}{5}}\right)^4}{12^{\frac{1}{5}} \cdot 2^{\frac{1}{5}}}$

(1) $\left(\frac{3}{2}\right)^{\frac{4}{3}}$ (2) $\left(\frac{3}{2}\right)^{\frac{3}{5}}$
(3) $\left(\frac{3}{2}\right)^{\frac{1}{2}}$ (4) None of these

37. If $x^{\frac{1}{3}} + y^{\frac{1}{3}} + z^{\frac{1}{3}} = 0$, then
(1) $x^3 + y^3 + z^3 = 27xyz$ (2) $x + y + z = 27xyz$
(3) $(x + y + z)^3 = 27xyz$ (4) None of these

38. Point of intersection of the line x + y = 1 and 2x + 2y = 4 are
(1) (1, 1) (2) (1, 0)
(3) No intersection point (4) None of these

39. If XY is a straight line, then what is the measure of $\angle ROY$?



(1) 60° (2) 50°
(3) 40° (4) None of these

40. In a ΔPQR, $\angle P = 45°$, and $\angle Q = 70°$, then the shortest and longest sides of the triangle are
(1) PQ, QR (2) QR, PR
(3) PQ, PR (4) None of these

&TG INTERACTIVE SECTION

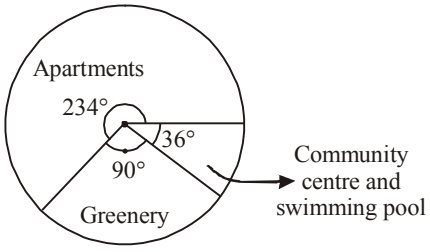
41. Can you recognize a pattern for the total number of oranges in a row? Now find the missing number.

Rows	1	2	3	4	5	6
Total oranges	1	3	6	10	15	

(1) 20 (2) 22
(3) 21 (4) None of these

For questions 42 and 43 :

The distribution of land in Dreamscape Housing Society is shown in the pie chart below:



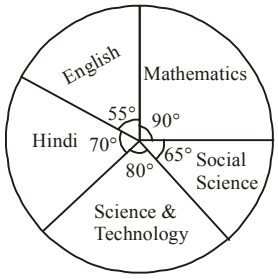
Given that the total land area in the housing society is 162000 m^2.

42. What is the area occupied by Apartments?
(1) 10,530 m^2 (2) 1,05,300 m^2
(3) 1,053 m^2 (4) None of these

43. What is the area occupied by Greenery?
(1) 405 m^2 (2) 45,000 m^2
(3) 40, 500 m^2 (4) None of these

For the next two questions :

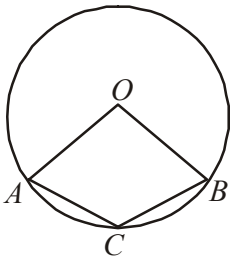
The given pie chart gives the marks scored in an examination by a student in English, Hindi, Science & Technology, Social Science and Mathematics. If the total marks obtained by the student were 540.



44. Maximum marks is scored in
(1) Maths (2) Science & Technology
(3) Hindi (4) None of these

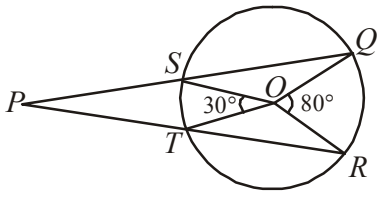
45. Total marks scored in English and Social Science is
(1) 120 (2) 180
(3) 210 (4) None of these

46. In the given figure, ΔOAB is an equilateral triangle. C is a point on the minor arc AB such that $AC = BC$.



What is the measure of $\angle CAB$
(1) 10° (2) 15°
(3) 20° (4) None of these

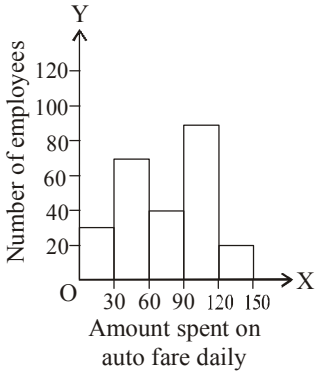
47. What is the measure of $\angle QPR$



(1) 25° (2) 35°
(3) 50° (4) None of these

For the next two questions.

The given histogram shows the amount spent on auto fare daily by the employees of a certain company.



48. How many employees spent less than Rs. 90 per day on auto fare?
(1) 130 (2) 140
(3) 150 (4) None of these

49. How many spent between 90 & 150?
(1) 90 (2) 100
(3) 110 (4) None of these

50. A group of 40 students is randomly selected from a particular school. The given frequency distribution table shows the blood groups of these students.

Blood group	Number of students
A	11
B	9
O	15
AB	5
Total number of students	40

Persons having O blood group are known as universal donors.What is the probability that a randomly chosen student is a universal donor?

(1) $\frac{7}{9}$ (2) $\frac{3}{8}$

(3) $\frac{5}{13}$ (4) None of these

END OF THE EXAM