



INTSO EDUCATION

MATHEMATICS TALENT SEARCH OLYMPIAD(MTSO) 2016 - 2017

STAGE - 1

TIME : 60 min.

CLASS : VI

Max. Marks : 50

Instructions:

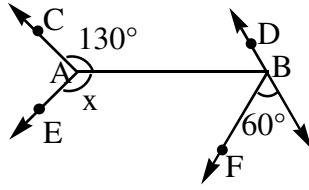
- ⇒ Fill the OMR sheet completely and carefully.
- ⇒ Each question carries one mark and has only one correct answer. No negative marks.
- ⇒ The question paper contains 50 questions to be answered in 60 minutes.

1. A place is 100m above sea level and another is 10m below sea level. The difference of the level between two places is []
1) 90m 2) 101m 3) 110 m 4) 120m
2. How many crores are equal to 1 billion []
1) 1 crore 2) 10 crores 3) 100 crores 4) 1000 crores
3. Number of two digit numbers are there in all []
1) 100 2) 99 3) 90 4) 101
4. The sum of two integers is 93. if one of them is -59 the other one is []
1) 34 2) -34 3) 152 4) -152
5. $(-27) \times (-16) + (-27) \times (-14)$ is equal to []
1) -810 2) 810 3) -54 4) 54
6. What should be added to $15\frac{2}{3}$ to get $18\frac{5}{6}$ []
1) $3\frac{1}{6}$ 2) $2\frac{1}{6}$ 3) $1\frac{1}{6}$ 4) $5\frac{1}{6}$
7. A rectangular sheet of paper is $15\frac{3}{4}$ cm long and $12\frac{1}{2}$ cm wide. The perimeter of rectangular sheet is []
1) $56\frac{1}{2}$ cm 2) $46\frac{1}{2}$ cm 3) $56\frac{1}{4}$ cm 4) $46\frac{1}{4}$ cm
8. The number of natural numbers are such that $a^3 - a^2$ is a square of a natural number is []
1) 7 2) 8 3) 9 4) 10
9. The last two digits of 3^{2012} when represented in decimal notation will be []
1) 81 2) 01 3) 41 4) 21
10. A natural number n has exactly two divisors and $(n + 1)$ has three divisors. The number of divisors of $n + 2$ is []
1) 2 2) 3
3) 4 4) depends on the value of n
11. A tin contains 18 kg ghee. After consuming $\frac{2}{3}$ of it. How much ghee left in tin is []
1) 8 kg 2) 6 kg 3) 9kg 4) 10kg

12. A rope of length $9\frac{3}{4}$ m is cut in to 6 pieces of equal length. The length of each piece is
 1) $2\frac{5}{8}$ m 2) $1\frac{5}{8}$ m 3) $3\frac{5}{8}$ m 4) $\frac{5}{8}$ m []
13. 24 litters of milk was distributed equally among all the students of a hostel . If each student got $\frac{2}{5}$ litre of milk. Number of students are there in the hostel is []
 1) 40 2) 80 3) 60 4) 30
14. Rishita reads a book for $1\frac{3}{4}$ hours every day and reads the entire book in 6 days number of hours does he take to read the entire book. []
 1) $10\frac{1}{2}$ hours 2) $9\frac{1}{2}$ hours 3) $7\frac{1}{2}$ hours 4) $11\frac{1}{2}$ hours
15. A bowler took 15 wickets for 321 runs. What is his average score per wicket []
 1) 21 runs 2) 21.4 runs 3) 22 runs 4) 22.5 runs
16. The product of two decimals is 1.824. If one of them is 0.64, then the other decimal is[]
 1) 2.85 2) 1.85 3) 3.85 4) 2.95
17. The descending order of the rational number $\frac{4}{-9}$, $\frac{-5}{12}$, $\frac{7}{-18}$ and $\frac{-2}{3}$ is []
 1) $\frac{-5}{12} > \frac{-4}{9} > \frac{-2}{3} > \frac{-7}{18}$ 2) $\frac{-4}{9} > \frac{-2}{3} > \frac{-5}{12} > \frac{-7}{18}$
 3) $\frac{-7}{18} > \frac{-5}{12} > \frac{-4}{9} > \frac{-2}{3}$ 4) $\frac{-5}{12} > \frac{-7}{18} > \frac{-4}{9} > \frac{-2}{3}$
18. Among the following numbers is in standard form []
 1) 21.56×10^5 2) 215.6×10^4 3) 2.156×10^6 4) 2156×10^6
19. An angle which is greater then 90° and less than 180° is called []
 1) acute angle 2) obtuse angle 3) reflexangle 4) zeroangle
20. What is the remainder when 7^{2000} is divided with 6 []
 1) 3 2) 2 3) 5 4) 1
21. The unit digit in the expansion of 4^{2004} is []
 1) 4 2) 8 3) 7 4) 6
22. If in $\triangle ABC$ is $3\angle A = 4\angle B = 6\angle C$, then $\angle A$ is equals to []
 1) 60° 2) 40° 3) 90° 4) 80°
23. A 15m ladder is placed against a wall to reach a window 12m high. The distance of the foot of the ladder from the wall is []
 1) 8m 2) 10m 3) 9m 4) 11m
24. A man goes 3km due north and then 4km due east. How far is he away from his initial position
 1) 3km 2) 4km 3) 5km 4) 7km []
25. The angle which is double of its supplement is []
 1) 90° 2) 140° 3) 125° 4) 120°

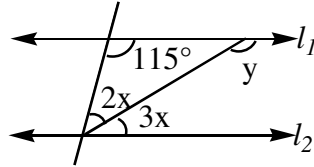
26. In the given figure $AC \parallel BD$ and $AE \parallel BF$ the measure of $\angle x$ is []

- 1) 130°
- 2) 110°
- 3) 70°
- 4) 50°



27. If line $l_1 \parallel l_2$ in the given figure. Then the value of Y is []

- 1) 141°
- 2) 151°
- 3) 131°
- 4) 121°



28. Lines M and N are cut by a transversal so that $\angle 1$ and $\angle 5$ are corresponding angles. If $\angle 1 = 26x - 7^\circ$ and $\angle 5 = 20x + 17^\circ$ for what value of x makes lines M and N are parallel

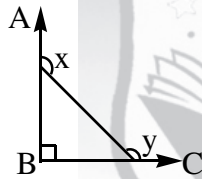
- 1) 5
- 2) 4
- 3) $4\frac{1}{2}$
- 4) $3\frac{1}{4}$ []

29. The complement of an angle whose measure is $(3x - 8)^\circ$ []

- 1) $(3x - 98)^\circ$
- 2) $(82 - 3x)^\circ$
- 3) $(98 - 3x)^\circ$
- 4) $(3x - 82)^\circ$

30. In a $\triangle ABC$ right angle at B, then the relation between x and y is []

- 1) $x + y = 180^\circ$
- 2) $x + y = 270^\circ$
- 3) $x + y = 300^\circ$
- 4) $x + y = 90^\circ$



31. If the angles of a triangle are $30^\circ, 60^\circ, 90^\circ$, then the ratio of corresponding sides is []

- 1) 1 : 2 : 3
- 2) $1 : 1 : \sqrt{2}$
- 3) $1 : \sqrt{3} : 2$
- 4) $1 : \sqrt{2} : 2$

32. The point of intersection of right bisectors of a triangle is called []

- 1) Incentre
- 2) circumcentre
- 3) orthocentre
- 4) centroid

33. The centroid of a triangle divides the line segment joining orthocentre and centroid in the ratio is []

- 1) 1 : 2
- 2) 2 : 1
- 3) 1 : 3
- 4) 3 : 2 []

34. The number of diagonals in a quadrilateral is []

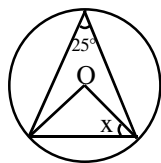
- 1) 2
- 2) 3
- 3) 4
- 4) 6

35. The diagonals of a rhombus are equal, then the rhombus is a []

- 1) parallelogram not a square
- 2) parallelogram but not a rectangle
- 3) rectangle but not a square
- 4) square

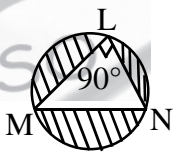
36. In a given figure the value of x is []

- 1) 60°
- 2) 65°
- 3) 70°
- 4) 55°



37. The circum centre in a right angle triangle is []

- 1) inside the triangle
- 2) out side the triangle
- 3) on one of the perpendicular sides
- 4) on the hypotenuse

38. ABCD is a cyclic quadrilateral whose side AB is a diameter of the circle through AB, C, D. If $\angle ADC = 130^\circ$, then $\angle BAC$ is equals to []
 1) 40° 2) 50° 3) 60° 4) 30°
39. The length of the diagonal of a square and that of the side of another square are both 10cm. The ratio of the area of first square to that of the second is []
 1) 2 : 1 2) 3 : 1 3) 1 : 3 4) 1 : 2
40. If the perimeter of the top of the rectangular table is 28m, where as its area is 48m^2 . Then the length of its diagonals is []
 1) 10cm 2) 15cm 3) 12cm 4) 8cm
41. The sides of a triangle are 3cm, 4cm, 5cm, then the area of the triangle formed by joining mid points of the sides of a triangle is []
 1) 6cm^2 2) 3cm^2 3) 1.5cm^2 4) 12cm^2
42. If the sides of an equilateral triangle are increased by 20%, 30% and 50% respectively to form a new triangle. then the percentage increased in the perimeter of the equilateral triangle is []
 1) 33% 2) 24% 3) $33\frac{1}{3}\%$ 4) $34\frac{1}{3}\%$
43. What is the remainder when 2^{98} is divided with 33 []
 1) 8 2) 25 3) 32 4) 31
44. The product of divisors of $(420)^4$ is []
 1) $(420)^{1125}$ 2) $(420)^{2250}$ 3) $(420)^{\frac{1125}{2}}$ 4) $(420)^{5000}$
45. The volume of a cube is V. The total length of its edges is []
 1) $6V^{\frac{1}{3}}$ 2) $8\sqrt{V}$ 3) $12V^{\frac{2}{3}}$ 4) $12V^{\frac{1}{3}}$
46. In the given figure $MN = x$. The area of the shaded region is []
 1) $\frac{\pi x^2}{2}$ 2) $\frac{\pi x^2}{4}$ 3) πx^2 4) $4\pi x^2$
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47. The value of $\frac{1}{20} + \frac{1}{30} + \frac{1}{42} + \frac{1}{56} + \frac{1}{72} + \frac{1}{90} + \frac{1}{110} + \frac{1}{132}$ is []
 1) $\frac{1}{8}$ 2) $\frac{1}{7}$ 3) $\frac{1}{6}$ 4) $\frac{1}{10}$
48. The $\frac{p}{q}$ form of $0.\overline{89}$ is []
 1) $\frac{89}{99}$ 2) $\frac{89}{90}$ 3) $\frac{89}{100}$ 4) $\frac{8.9}{100}$
49. Among the following is not reciprocal of $\left(\frac{2}{3}\right)^4$ []
 1) $\left(\frac{3}{2}\right)^4$ 2) $\left(\frac{2}{3}\right)^{-4}$ 3) $\left(\frac{3}{2}\right)^{-4}$ 4) $\frac{3^4}{4^2}$
50. If $9^{8.6} \times 8^{3.9} \times 72^{4.4} \times 9^{3.9} \times 8^{8.6} = 72^x$, then the value of x is []
 1) 15.1 2) 17.9 3) 20.9 4) 16.9