Olympiad Foundation

SAMPLE PAPER CLASS 9th

OLYMPIAD FOUNDATION

MATHEMATIC OLYMPIAD

Division of Marks

S.No.	Topic/Section	No. of Question	Marks
1	Mathematics	25	25
2	HOTS (High Order thinking Skill)	10	10
3	Reasoning & Mental Ability	15	15
	Total	50	50

INSTRUCTIONS :

1. Use Blue/Black ballpoint pen only to darken the appropriate circle.
2. Mark should be dark and should completely fill the circle.
3. Dark only one circle for each entry.
4. Dark the circle in the space provided only.
5. Rough work must not be done on the answer sheet and do not use white- fluid or any other rubbing material on Answer sheet.
6. Each question carries one mark.

TIME: 1 Hour M.M.: 50

Select the correct answer and darken your answer in the table :

MATHEMATICS

1. Find the number of even integers starting with 10 and will give the sum as 400.

   (A) 15 (B) 16

   (C) 20 (D) 22

2. Which one of the following numbers is non - terminating and repeating decimals ?

   (A) 39 / 24 (B) 45 / 56

   (C) 78 / 32 (D) 3 / 11

3. If $\frac{a^{x} \times 3^{2} \times (3^{x/2})^{-2} (27)^{x}}{3^{3}y \times 2^{3}} = \frac{1}{27}$, then y - x is equal to :

   (A) 0 (B) 1

   (C) -1 (D) 2

4. If $y = 2 + \sqrt{3}$, then the value of $y^{2} + \frac{1}{y^{2}}$ is :

   (A) 12 (B) 14

   (C) 16 (D) 18

5. The value of $\frac{1}{1+\sqrt{2}} + \frac{1}{\sqrt{2}+\sqrt{3}} + \text{\_\_\_\_\_} = \frac{1}{\sqrt{15}+\sqrt{16}}$ is :

   (A) 1 (B) 2

   (c) 3 (D) 16

6. If $y = \sqrt[4]{5+\sqrt{3}}$, then the value of $\frac{y^{4}}{22} + \frac{1}{y^{4}}$ is :

   (A) 5/11 (B) 1/5

   (C) 3/11 (D) 1

7. If $y + \frac{1}{y} = 5$, then $y^4 + \frac{1}{y^4}$ is equal to :

(A) 324 (B) 625

(C) 527 (D) 576

8. If $a + b + c = 0$, then $\frac{a^2}{bc} + \frac{b^2}{ac} + \frac{c^2}{ab}$ is equal to :

(A) 0 (B) 2

(C) -2 (D) 3

9. The remainder when $f(y) = 4y^3 - 12y^2 + 14y - 3$ is divisible by $P(y) = y - 1/2$ is :

(A) 0 (B) 1/2

(C) 3/2 (D) 1

10. The distance b/w the points (-5,7) and (8,9) is :

(A) 11 units (B) 12.26 units

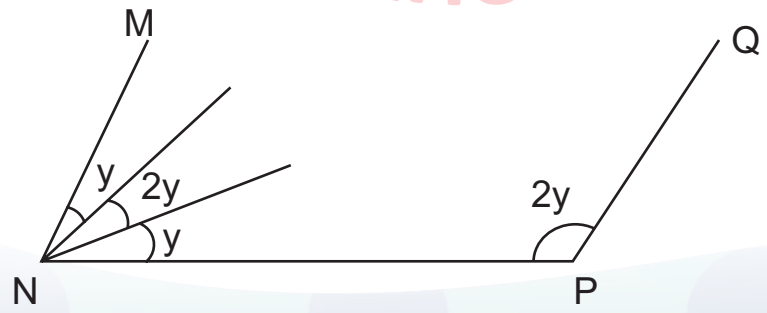
(C) 13.15 units (D) 14.2 units

11. The coordinates of centroid of a triangle whose are (-4,0) (3,5) and (4,7) is :

(A) (1,4) (B) (-1, 4)

(C) (1, -4) (D) (-1,-4)

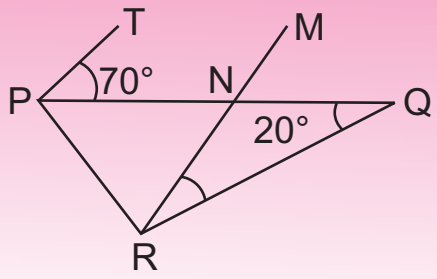
12. If MN || QP, then the value of y is :



(A) 15º (B) 18º

(C) 20º (D) 22º

13. In the figure given below, TP || MR, ∠TPN = 70° and ∠RQN = 20°, then NRQ is :



(A) 30°

(B) 50°

(C) 60°

(D) 10°

14. Bisectors of all the angles of a parallelogram enclose :

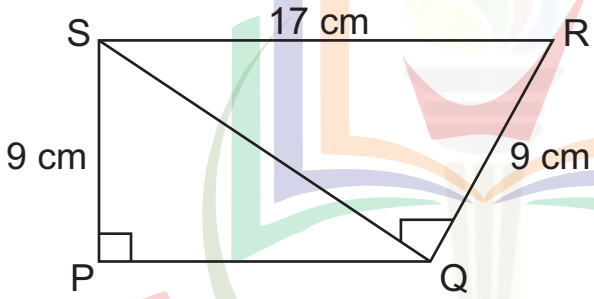
(A) Square

(B) Rhombus

(C) Parallelogram

(D) Rectangle

15. Area of quadrilateral PQRS in. The figure given below is :



(A) 86 cm²

(B) 96 cm²

(C) 104 cm²

(D) 114 cm²

16. Find the value of ($5\frac{3}{4} \times 5\frac{1}{4}$)

(A) $5\frac{2}{4}$

(B) $5\frac{3}{4}$

(C) $5\frac{1}{4}$

(D) 5

17. Find a rational number lying b/w 1/3 and 1/2.

(A) 5/12

(B) 7/12

(C) 3/2

(D) 5/2

18. Express 2/11 in decimal form ?

(A) $0.\overline{21}$

(B) $0.\overline{15}$

(C) $0.\overline{18}$

(D) $0.\overline{19}$

19. Simplify : $\left(\frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}} + \frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}\right)$

(A) 10 (B) 30

(C) 60 (D) 90

20. Find zeroes of the polynomial $x^2 + x - 6$

(A) (2, -3) (B) (1, 3)

(C) (2, 3) (D) (-2, 3)

21. Factorize, $4x^2 + ay^2 + 16z^2 + 12xy - 24yz - 16xz$.

(A) $(2x + 3y + 4z)^2$ (B) $(2x - 3y + 4z)^2$

(C) $(2x - y + 4z)^2$ (D) $(2x + 3y - 4z)^2$

22. In which quadrant the point (2,-5) lines ?

(A) 1st (B) 2nd

(C) 3rd (D) 4th

23. Find a if the distance b/w (a,2) and (3,4) is 8.

(A) $3 \pm \sqrt{60}$ (B) $3 \pm \sqrt{40}$

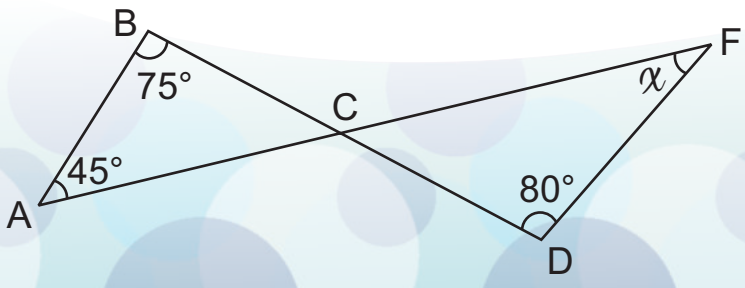
(C) $3 \pm \sqrt{20}$ (D) $3 \pm \sqrt{10}$

24. If the angle of a triangle are in the ratio 3 : 5 : 4, then find the largest angle of the triangle.

(A) 45º (B) 60º

(C) 30º (D) 75º

25. Find the value of z from the fig. given below :



(A) 40º (B) 60º (C) 30º (D) 75º

26. In a $\triangle$ ABC if AB = AC and the bisectors of angle B and C intersect at point O. Then, which of the following is true ?

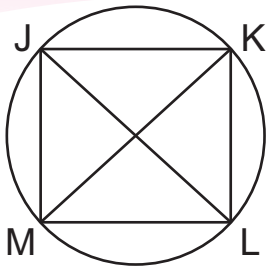
(A) BO = OC

(B) AO is bisector of $\angle$ BAC

(C) OA = OB = OC

(D) Both a and b

27. In the following figure, if MK bisects $\angle$ JKL then which of the following is incorrect ?



(A) JM = ML

(B) $\angle$ JKM = $\angle$ LKM

(C) $\triangle$JML is an isosceles

(D) None of these

28. If P + q = 10 and Pq = 5, then the value of $\frac{p}{q}+\frac{q}{p}$ will be :

(A) 22

(B) 18

(C) 20

(D) 21

29. Marie recorded a certain data as follow :-

19	13	20	14	K

If the mode is 14, then K will be :

(A) 19

(B) 13

(C) 20

(D) 14

30. If $\frac{(7 + 4\sqrt{5}) + (4 -2\sqrt{5}) - (10 + 5\sqrt{5})}{6} = p + q\sqrt{5}$ and then $\sqrt{p - q}$ is equal to :

(A) $\sqrt{6}$

(B) $\sqrt{6}/2$

(C) $\sqrt{6}/3$

(D) $1/\sqrt{6}$

31. The value of question mark (P) in the expression $x^4 - 7x^4 + 1 = ?$, if $x = \frac{\sqrt{3} + 2}{\sqrt{2}}$ is :

(A) 1/4

(B) 3/4

(C) 1

(D) 3

32. The point on graph of the linear eq. $2x + 5y = 19$ whose ordinate is $1\frac{1}{2}$ times of abscissa , is

(A) (-3, 1/2)

(B) (3, 4 1/2)

(C) (2, 3)

(D) (6, -9)

33. If $r\frac{na + mb}{ny}$, then an increase in which of the following will decrease the value of r?

(A) a

(B) b

(C) x

(D) y

34. The value of the expression $\sqrt{(x+y+3)\,(x+y-z) + (z^2-x^2-y^2) - 2xy}$ is :

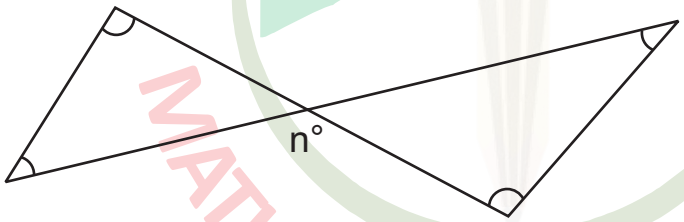
(A) a

(B) 2x

(C) 2y

(D) x + y + z

35. In the given figure, what is the sum in term of n, of the degree measures of the four angles marked with arrows ?



(A) x

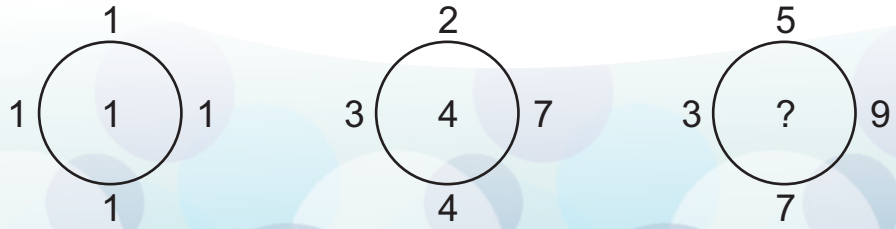
(B) 2x

(C) 180 x

(D) 180 - 2x

REASONING AND MENTAL ABILITY

36. Find the missing character from the given alternatives :



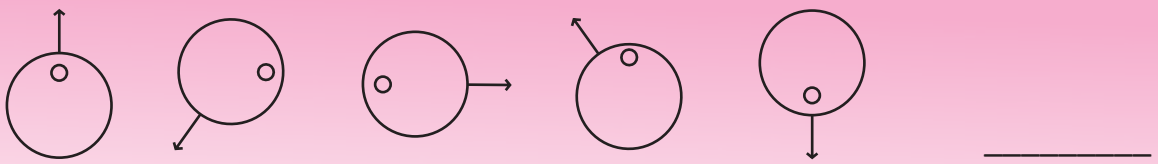
(A) 5

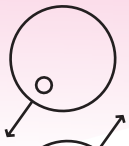
(B) 6

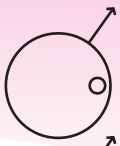
(C) 7

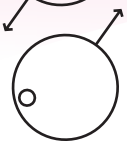
(D) 8

37. Find the next series :



(A) 

(B) 

(C) 

(D) 

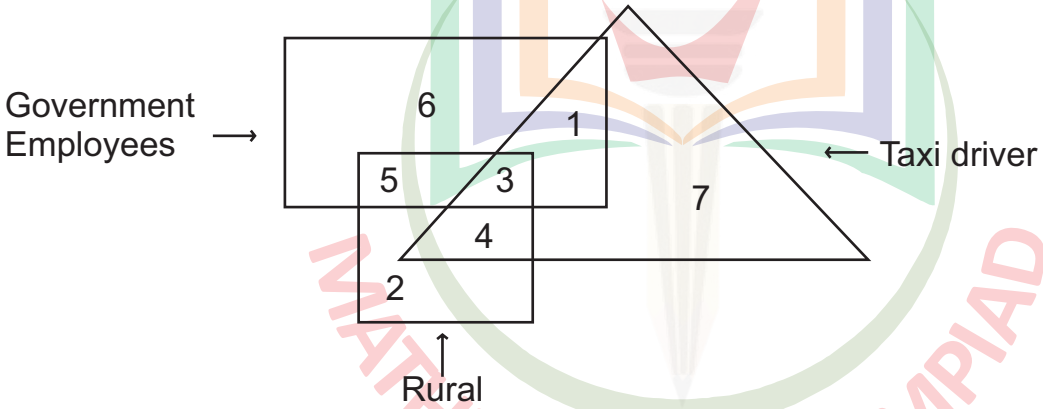
38. If + is x, - is +, x is ÷, ÷ is - then simplify the following expression :

4 x 2 ÷ 3 + 4

(A) 12 (B) 13

(C) 11 (D) 7

Direction : (39 - 41) study the diagram and answer the questions :



Sum of numbers in a figure represents the number of person of corresponding category

39. The number of rurals who are taxi driver but not government employees is :

(A) 6 (B) 8

(C) 10 (D) 4

40. The number of taxi drivers who are government employees but not belonging to rural is :

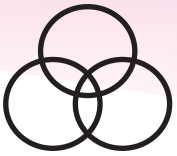
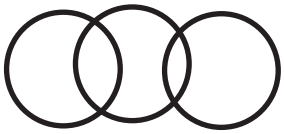
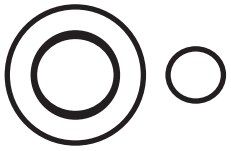
(A) 2 (B) 1

(C) 4 (D) 3

41. The ratio of numbers who are rural but are neither taxi drivers nor government employees and who are neither rural nor taxi drivers is :

(A) 2 : 3
(B) 1 : 3
(C) 6 : 7
(D) 7 : 4

42. Which of the following Venn diagram best depicts the relationship amongst, Geometry, Quadrilateral, Polygon ?

(A) 
(B) 
(C) 
(D) 

43. Arrange the following four words in the order in which they occur in a dictionary and choose the correct sequence.
(1) Parallelogram
(2) Parameter
(3) Paper
(4) Parallelogram

(A) 3, 1, 4, 2
(B) 3, 2, 1, 4
(C) 3, 1, 2, 4
(D) 3, 4, 1, 2

44. Arrange the words in meaningful sequence :
(1) Birth (2) Death (3) Study (4) Degrees (5) Marriage

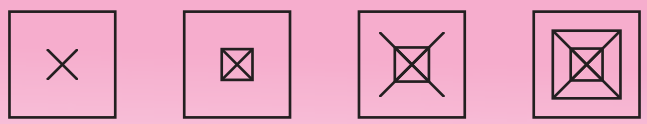
(A) 1, 5, 2, 3, 4
(B) 1, 3, 5, 4, 2
(C) 1, 3, 4, 5, 2
(D) 1, 5, 3, 4, 2

45. How many meaningful words can be made from the letter N, R, E and A using each letter only once ?

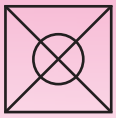
(A) None
(B) One
(C) Two
(D) Three

46. Which of the following is exactly in the middle of 5 and U in the given arrangement ?
P4A5E₹6@$MT7£U=¥>8DNWC

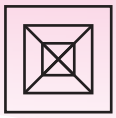
(A) @
(B) $
(C) M
(D) T

47.  _____

(A) 

(B) 

(C) 

(D) 

48. Find the mirror image of each following combination of letters.

N A T I O N A L

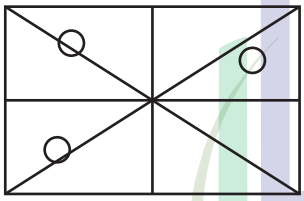
(A) A T I O И A L

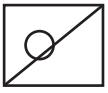
(B) ⅃ A И O I A И

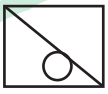
(C) N A T O И A L

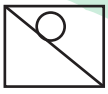
(D) None of these

49. Select a fig from the options which will come to complete the pattern in fig (x) in place of ?



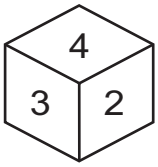
(A) 

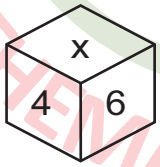
(B) 

(C) 

(D) 

50. Given below are the three different position of a dice. What shall come in the place of x ?





(A) 1 (B) (C) 4 (D) 5

ANSWER KEY

1.	C	11.	C	21.	C	31.	B	41.	B
2.	C	12.	A	22.	A	32.	C	42.	A
3.	B	13.	B	23.	B	33.	D	43.	D
4.	A	14.	D	24.	C	34.	A	44.	C
5.	C	15.	B	25.	A	35.	B	45.	C
6.	D	16.	C	26.	D	36.	B	46.	B
7.	B	17.	D	27.	D	37.	C	47.	A
8.	A	18.	A	28.	B	38.	B	48.	B
9.	B	19.	D	29.	D	39.	D	49.	B
10.	B	20.	C	30.	C	40.	B	50.	A