

MATH TALENT HUNT EXAMINATION – 2020
Organised by : The Pi (π) Group of Mathematics (TPGM)

Class – VII
F.M – 100

Time – 2 Hour

Instructions:

1. There are 50 questions of marks 2 each.
2. Put tick mark on the correct alternative against each question in your answer sheet.
3. There is no negative marking.

1. $\sqrt[3]{\frac{27}{125}} + \sqrt{\frac{4}{25}} = ?$

- (a) 4 (b) 3 (c) 2 ☒ (d) 1

2. Which of the following is true ?

- (a) $\sqrt{a} + \sqrt{b} = \sqrt{a+b}$ ☒ (b) $\sqrt{a} \cdot \sqrt{b} = \sqrt{a \cdot b}$ (c) $\sqrt{a} - \sqrt{b} = \sqrt{a-b}$ (d) None of these.

3. If $m = (-1)^{2000}$ and $n = (-1)^{2002}$, then find the value of $\frac{m}{n}$.

- (a) -1 ☒ (b) 1 (c) 2000 (d) 2002.

4. The HCF of two numbers is 6 and product of two numbers is 360. Find the LCM of the numbers.

- ☒ (a) 60 (b) 30 (c) 12 (d) 6

5. If $r^3 = 1728$, then find r .

- ☒ (a) 12 (b) 14 (c) 16 (d) 18

6. If $x = (-23) + 22 + (-23) + 22 + \dots$ upto 40 terms and $y = 11 + (-10) + 11 + (-10) + \dots$ upto 20 terms, then $(y - x) = ?$

- (a) 40 (b) 10 (c) 20 ☒ (d) 30

7. Which of the following fractions represents a non-terminating repeating decimals ?

- (a) $\frac{625}{128}$ (b) $\frac{273}{250}$ ☒ (c) $\frac{750}{216}$ (d) $\frac{150}{300}$

8. Find the largest number that divides 92 and 75 and leave the remainders 2 and 5 respectively.

- ☒ (a) 10 (b) 15 (c) 25 (d) 30

9. If $A = (x - a)(x - b)(x - c) \dots (x - z)$, then the number of terms in the expansion of

$(a+A)(b+A)(c+A) \dots (z+A)$ is ____.

- ☒ (a) 1 (b) 27 (c) 56 (d) 54

10. If $\left(x + \frac{1}{x}\right) = 2$, then $\left(x^{2020} - \frac{1}{x^{2019}}\right) = ?$

- (a) 2 (b) 1 ☒ (c) 0 (d) -1

11. The degree of $(-3x^3 + 5x^2 + 4)$ is ____.

- (a) 1 (b) 2 ☒ (c) 3 (d) 4

12. If $p+q = 15$ and $pq = 54$, then $(p - q)$ can be -

- ☒ (a) 3 (b) 5 (c) 4 (d) 6

13. $\frac{5}{4}$ as a per cent is ____.

- (a) 80% ☒ (b) 125% (c) 120% (d) 130%

14. If $m : n = 3 : 5$ and $m : r = 2 : 3$, then find $n : r$.

- (a) 1 : 1 (b) 9 : 10 (c) 6 : 4 ☒ (d) 10 : 9

15. 1 km/h = ____ m/sec.

- (a) $\frac{18}{5}$ (b) $\frac{10}{17}$ ☒ (c) $\frac{5}{18}$ (d) $\frac{17}{10}$

16. The value of 30% of 60% of 200 is ____.

- (a) 23 (b) 24 (c) 18 (d) 36

17. The fourth proportional of 3, 7 and 15 is ____.

- (a) 35 (b) 15 (c) 7 (d) 21

18. Raj travels a distance of one kilometre at a speed of 1 m/s and four kilometres at a speed of 30 km/h. Find the total time taken to cover the entire distance (in seconds).

- (a) 1480 (b) 9000 (c) 950 (d) 1050

19. The numbers of line of symmetry of a rectangle is ____.

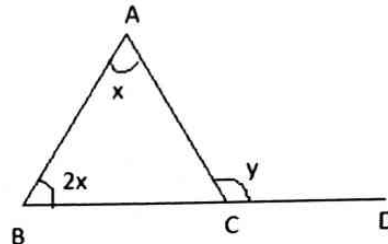
- (a) 2 (b) 3 (c) 4 (d) None of these

20. The sum of an angle and one third of its supplementary angle is 90° . Find the angle.

- (a) 135° (b) 120° (c) 60° (d) 45°

21. In the following figure Given below, $AB = AC$ and BC extended to the point D . Find $(y-x)$.

- (a) 36° (b) 72° (c) 108° (d) 180°



22. Find the perimeter of a rhombus, the length of whose diagonals are 16 cm and 30 cm.

- (a) 64 cm (b) 68 cm (c) 100 cm (d) 120 cm

23. The adjacent angles of a rhombus are $(2x - 35^\circ)$ and $(x + 5^\circ)$. Find x .

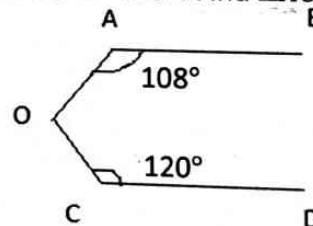
- (a) 70° (b) 40° (c) 35° (d) 45°

24. Two poles 18m and 13m high, stand upright in a play ground. If their feet are 12m apart, find the distance between their tops.

- (a) 12 m (b) 18 m (c) 13 m (d) None of these

25. It is given that $AB \parallel CD$, $\angle BAO = 108^\circ$ and $\angle OCD = 120^\circ$. Find $\angle AOC$.

- (a) 102° (b) 132° (c) 72° (d) 62°



26. If $4 \times 5^x = 500$, then find the value of x^x .

- (a) 8 (b) 1 (c) 64 (d) 27

27. If $a = 25$ then find the value of $(a^{25} + a^{0^{25}})$.

- (a) 25 (b) 26 (c) 24 (d) 0

28. $(6^{-1} - 8^{-1})^{-1} = ?$

- (a) $-\frac{1}{2}$ (b) -2 (c) $\frac{1}{24}$ (d) 24

29. By what number should $(-8)^{-1}$ multiplied to get $(10)^{-1}$?

- (a) $\frac{4}{5}$ (b) $-\frac{5}{4}$ (c) $-\frac{4}{5}$ (d) None of these

30. If $2^{2n-3} = 2048$, then $(4n + 3n^2) = ?$

- (a) 175 (b) 25 (c) 125 (d) 75

31. How many metres of carpet 63cm wide will be required to cover the floor of a room 14m by 9m?

- (a) 200m (b) 210m (c) 220m (d) 185m

32. The area of a square and that of a square drawn on its diagonal are in the ratio ____.
- (a) $1 : \sqrt{2}$ (b) $1 : 2$ (c) $1 : 3$ (d) $1 : 4$
33. The difference between the circumference and radius of a circle is 37cm. The area of the circle is,
- (a) 111 cm^2 (b) 148 cm^2 (c) 154 cm^2 (d) 259 cm^2
34. A square is inscribed in a circle of radius 7cm, then find the area of the square (in cm^2).
- (a) 49 (b) 98 (c) 196 (d) 392
35. Find the cost of fencing a semi-circular garden of radius 7m at Rs.10 per meter.
- (a) Rs.720 (b) Rs.360 (c) Rs.180 (d) Rs.90
36. The angle of a sector of radius 14cm is 90° . The area of the sector is -
- (a) 144 cm^2 (b) 154 cm^2 (c) 162 cm^2 (d) 196 cm^2
37. The minute hand of a clock is 14cm long. How far does the tip of the minute hand move in 60 minutes?
- (a) 22 cm (b) 44 cm (c) 33 cm (d) 88 cm
38. If $\left(\frac{x}{2} + \frac{x}{3}\right) = 5$ then $x = ?$
- (a) 2 (b) 3 (c) 4 (d) 6
39. Divide 184 into two parts such that one-third of one part may exceed one-seventh of the other part by 8.
- (a) 72, 112 (b) 82, 102 (c) 62, 122 (d) None of these
40. Find the median of the data 21, 33, 15, 19, 26, 32, 14 and 24.
- (a) 24.5 (b) 24 (c) 22.5 (d) 22
41. $A = \{0, 1^2, 2^2\}$ and $B = \{0, 1, 4\}$, find $A \cap B$.
- (a) $\emptyset$ (b) $\{0\}$ (c) $\{0, 1\}$ (d) $\{0, 1, 4\}$
42. If $n(A) = 20$, $n(B) = 30$ and $n(A \cup B) = 45$, then $n(A \cap B) = ?$
- (a) 5 (b) 10 (c) 15 (d) 20
43. Find 8% of 5 litres.
- (a) 0.4 lt (b) 0.5 lt (c) 0.8 lt (d) None of these
44. Find the percentage of pure gold in 22-carat gold, if 24-carat gold is 100% pure gold.
- (a) $91\frac{2}{3}\%$ (b) $92\frac{2}{3}\%$ (c) $22\frac{2}{3}\%$ (d) None of these
45. If the simple interest on a sum of money at 6% per annum for 2 years is Rs.12, what is the sum of money?
- (a) Rs.100 (b) Rs.200 (c) Rs.50 (d) Rs.250
46. A person buys a car for Rs.5 lakh and sells it for Rs.7.5 lakh. What is the profit as a percentage of S.P?
- (a) $6\frac{2}{3}\%$ (b) 12% (c) $33\frac{1}{3}\%$ (d) 21%
47. In the given figure, AOB is a straight line and the ray OC stands on it. If $\angle AOC = (2x - 10)^\circ$ and $\angle BOC = (3x + 20)^\circ$, then find $(5x + 40)^\circ$.
- (a) 110° (b) 93° (c) 210° (d) 195°
48. Find the value of $\left(83 - \frac{12q}{16}\right)$, when $q=4$.
- (a) 35 (b) 80 (c) 48 (d) 86
49. If $a^2 + b^2 = 5ab$, then find the value of $\left(\frac{a^2}{b^2} + \frac{b^2}{a^2}\right)$.
- (a) 21 (b) 23 (c) 30 (d) 40
50. The absolute value of $(-28 + 12 + 42 - 63)$ is -
- (a) 37 (b) -36 (c) 145 (d) -145