

Entrance prep tutorial private class

Mathematics model exam

Full Name :

School and city:

Phone number :

User name:

Instruction: Choose the best answer from the given options for each question

1. For any two non-empty sets A and B. If then which one of the following is always true?

- A. $A \cap B = B$
- B. $A \cup B = A$
- C. $A \cap B = A$
- D. $(A \cup B) \cap A = B$

2. Which of the following is an irrational number?

- a) $\frac{22}{7}$ b) $3\sqrt{5}$ c) $\sqrt{5}$ d) 0

3. Simplify $4(2x - 3) + 5$.

- a) $8x - 12$ b) $8x - 7$ c) $8x - 6$ d) $8x - 9$

4. What is $12 \div (3 + 1)$?

- a) 2 b) 3 c) 4 d) 6

5. If $x = 6$, what is the value of $3x^2 - 2x + 1$?

- a) 109 b) 113 c) 115 d) 119

6. If the ratio of the areas of two similar triangles are , then which one of the following is Not true?

- A. The ratio of their perimeter is 8:9.
- B. The ratio of their sides is 8:9.
- C. The ratio of their perimeter is 64:81.
- D. All the ratio of their corresponding sides are equal.

7. Which inequality represents $|x|$ is less than or equal to 5?

- a) $x < 5$

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b) $x \leq 5$

c) $x > 5$

d) $x \geq 5$

8. If $3x - 7 = 2$, what is x ?

a) 1 b) 2 c) 3 d) 4

9. If $A = \{1, 2, 3\}$ and $B = \{2, 3, 4\}$, what is $A \cap B$?

a) $\{1, 2\}$ b) $\{2, 3\}$ c) $\{3, 4\}$ d) $\{1, 2, 3, 4\}$

10. The set $\{x \mid x \text{ is a prime number less than } 10\}$ is:

a) $\{2, 3, 5, 7\}$ b) $\{1, 2, 3, 4\}$ c) $\{2, 4, 6, 8\}$ d) $\{3, 5, 7, 9\}$

11. If $f(x) = 2x + 3$, what is $f(4)$?

a) 8 b) 11 c) 12 d) 10

12. What is the range of the function $f(x) = x^2$?

a) All real numbers b) Non-negative real numbers c) Positive real numbers d) Negative real numbers

13. Which of the following is a rational function?

a) $f(x) = x^2 + 1$ b) $f(x) = 1/x$ c) $f(x) = \sqrt{x}$ d) $f(x) = e^x$

14. Which one of the following is true about polynomial function?

A. The domain of polynomial function is the set of positive real number

B. The graph of a polynomial function of degree n has at most n turning points.

C. The graph of every polynomial function crosses the y -axis.

D. The graph of a polynomial function of degree n has at most $n-1$ zeros.

15. What is the sum of the angles in a triangle?

a) 180° b) 360° c) 90° d) 270°

16. The area of a rectangle is given by which formula?

a) $A = l + w$ b) $A = l \times w$ c) $A = \frac{1}{2}(l \times w)$ d) $A = 2(l + w)$

17. What is the value of $\frac{3}{4} \div \frac{1}{2}$?

a) $\frac{3}{2}$ b) $\frac{3}{8}$ c) $\frac{3}{6}$ d) $\frac{3}{5}$

18. If $5x + 3 = 2x + 12$, what is x ?

a) 3 b) 4 c) 5 d) 6

19. A triangle has sides of lengths 3, 4, and 5. What type of triangle is it?

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a) Equilateral b) Isosceles c) Scalene d) Right

20. What is the perimeter of a rectangle with length 10 and width 5?

a) 30 b) 40 c) 50 d) 60

21. What is the value of $2^3 + 3^2$?

a) 11 b) 17 c) 18 d) 19

22. The solution set of the inequality is $3x^2 + 2x - 1$:

A. $(-\infty, -1) \cup (1/3, \infty)$ B. $(-1, 1/3)$ C. null set D. $X: X \in \mathbb{R}$

23. What is the product of the roots of the equation $x^2 - 5x + 6 = 0$?

a) 6 b) 5 c) 4 d) 3

24. For the function $f(x) = 3x + 2$, what is the slope?

a) 3 b) 2 c) -3 d) -2

25. If $A = \{1, 2\}$ and $B = \{2, 3\}$, what is $A \cup B$?

a) $\{1, 2\}$ b) $\{2, 3\}$ c) $\{1, 2, 3\}$ d) $\{1, 2, 2, 3\}$

26. What is the complementary angle of 30° ?

a) 60° b) 90° c) 45° d) 120°

27. If a circle has a radius of 4, what is its area?

a) 16π b) 8π c) 12π d) 20π

28. What is the distance between the points (1, 2) and (4, 6)?

a) 3 b) 5 c) 7 d) 8

29. In the equation $y = mx + b$, what does m represent?

a) Y-intercept b) Slope c) X-intercept d) Point of origin

30. What is the value of $6!$?

a) 720 b) 120 c) 60 d) 36

31. What is the solution to the equation $2(x - 3) = 8$?

a) 5 b) 7 c) 8 d) 10

32. If $x + 2 < 5$, what is the solution set for x ?

a) $x < 3$ b) $x < 5$ c) $x < 2$ d) $x < 4$

33. Which one of the following is Not true about a parallelogram ?

A. Parallelogram is a quadrilateral with opposite sides parallel.

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B. The consecutive angles of a parallelogram are supplementary.

C. The diagonals of a parallelogram are equal.

D. The opposite angles of a parallelogram are congruent.

34. The area of a triangle with base 10 and height 5 is:

a) 25 b) 20 c) 50 d) 15

35. What is the circumference of a circle with a radius of 3? (Use $\pi = 3.14$)

a) 9.4 b) 18.84 c) 6.28 d) 12.56

36. If $x^2 - 9 = 0$, what are the values of X ?

a) (3, -3) b) (9, -9) c) (0) d) (1, -1)

37. Which of the following is the solution to $x^2 + 6x + 9 = 0$?

a) $x = 3$ b) $x = -3$ c) $x = -6$ d) Both a and b

38. What is the slope of the line represented by the equation $y = 4x + 1$?

a) 4 b) 1 c) -4 d) 0

39. If $2x + 3y = 12$ and $y = 2$, what is the value of x ?

a) 3 b) 4 c) 5 d) 6

40. What is the sum of the interior angles of a quadrilateral?

a) 360° b) 180° c) 90° d) 270°

41. If $A = \{2, 4, 6\}$ and $B = \{1, 4, 5\}$, what is $A - B$?

a) $\{2, 4\}$ b) $\{2, 6\}$ c) $\{1, 4, 5\}$ d) $\{6\}$

42. Which of the following is true about the graph of the function $f(x) = 2 / (x+1)$?

A. The graph has a vertical asymptote at $x=1$.

B. The graph intersects the axis at $y=2$.

C. The negative y axis is the vertical asymptote to the graph of f .

D. The graph has a horizontal asymptote at $y=2$.

43. The length of a rectangle is 8 and its width is 3. What is the area?

a) 24 b) 20 c) 30 d) 26

44. . The perimeter of a triangle is 30cm. The measure of the shortest side is 10 cm less than the longest side. The measure of the middle side is 6cm less than the sum of the other sides. Then what are the sides of the triangle?

A. 5cm,12cm,13cm

B. 4cm,10cm,16cm

C. 6cm,10cm,14cm

D. 4cm,12cm,14cm

45. If a right triangle has legs of length 6 and 8, what is the length of the hypotenuse?

a) 10 b) 12 c) 14 d) 16

46. What is the equation of a line with slope 2 that passes through the point (0, 1)?

a) $y = 2x + 1$ b) $y = 2x - 1$ c) $y = 1$ d) $y = -2x + 1$

47. If $5x + 2 = 17$, what is x ?

a) 2 b) 3 c) 4 d) 5

48. What is the volume of a cube with side length 4?

a) 16 b) 64 c) 32 d) 24

49. The expression $(x + 3)(x - 4)$ is equal to:

a) $x^2 - 12$ b) $x^2 - x - 12$ c) $x^2 + 12$ d) $x^2 - 7$

50. If the angles of a triangle are in the ratio 2:3:5, what is the smallest angle?

a) 36° b) 40° c) 50° d) 60°

GOOD LUCK!