Foundation Level Mathematics – Pure Math MCQ Questions

1. What is a function?

A) One input has many outputs

B) Each input has exactly one output **(Answer)**

C) No inputs

D) Random outputs

2. Which relation is a function?

A) $R = (1,2), (1,3)$

B) $X = (2,4), (3,5)$**(Answer)**

C) $Y = (4,1), (4,2)$

D) $Z = (5,6), (5,7)$

3. $\boldsymbol{Find\ f(2)\ if\ f(x) = 3x + 1}$

A) 5

B) 6

C) 7 (Answer)

D) 8

4. What is the y-intercept $\boldsymbol{of\ y = 2x + 3}$?

A) 2

B) 3 (Answer)

C) 0

D) $\boldsymbol{-3}$

5. The graph of a linear function is:

A) Circle

B) Curve

C) Straight line (Answer)

D) Triangle

6. What is the degree of a quadratic equation?

A) 1

B) 2 (Answer)

C) 3

D) 4

7. Solve $x^2 - 9 = 0$

A) $x = 3$

B) $x = -3$

C) $x = \pm 3$ (Answer)

D) $x = 0$

8. The quadratic formula is used to solve:

A) Linear equations

B) Quadratic equations (Answer)

C) Fractions

D) Graphs

9. Find the discriminant of $x^2 + 4x + 1 = 0$

A) 12 (Answer)

B) 16

C) 20

D) 8

10. How many real solutions does $x^2 + 1 = 0$ have?

A) 0 (Answer)

B) 1

C) 2

D) 3

11. Simplify 2^3

A) 6

B) 8 (Answer)

C) 9

D) 12

12. Simplify $3^2 \times 3^3$

A) 3^5 (Answer)

B) 3^6

C) 9^5

D) 6^5

13. Evaluate $log_{10}(100)$

A) 1

B) 2 (Answer)

C) 10

D) 100

14. Solve $2^x = 8$

A) 1

B) 2

C) 3 (Answer)

D) 4

15. Convert $2^4 = 16$ to logarithmic form

A) $log_2(16) = 4$ (Answer)

B) $log_4(16) = 2$

C) $log_{16}(2) = 4$

D) $log_2(4) = 16$

16. The logarithm function is the inverse of:

A) Addition

B) Subtraction

C) Exponential Functions (Answer)

D) Division

17. Solve $\boldsymbol{log_{10}(x) = 3}$

A) 30

B) 100

C) 1000 (Answer)

D) 3000

18. An acute angle is:

A) Greater than 90°

B) Equal to 90°

C) Less than 90° (Answer)

D) Equal to 180°

19. Convert 180° to radians.

A) π (Answer)

B) 2π

C) π/2

D) π/4

20. Convert $\frac{\pi}{2}$ radians to degrees.

A) 45°

B) 90° (Answer)

C) 180°

D) 360°

21. A right angle equals:

A) 45°

B) 60°

C) 90° (Answer)

D) 120°

22. Find $sin\ 30°$

A) 0

B) 1/2 (Answer)

C) 1

D) $\sqrt{3}$

23. Find cos 60°

A) ½ (Answer)

B) 1

C) 0

D) $\sqrt{2}$.

24. Find tan 45°

A) 0

B) 1 (Answer)

C) 2

D) √3

25. Which identity is correct?

A) $sin\ x + cos\ x = 1$

B) $sin^2x + cos^2x = 1$ (Answer)

C) $tan\ x = 1$

D) $cos\ x = 0$

26. The graph of the sine function is:

A) Straight line

B) Circular

C) Wave-like (Answer)

D) Square

27. Which trigonometric function equals $\frac{sinx}{cosx}$?

A) $Cosx$

B) $Tanx$ (Answer)

C) $Cotx$

D) $Secx$

28. The Law of Sines is used for:

A) Rectangles

B) Triangles (Answer)

C) Circles

D) Squares

29. Which formula represents the Law of Cosines?

A) $a + b = c$

B) $a^2 + b^2 = c^2$

C) $c^2 = a^2 + b^2 - 2abcosC$ $(Answer)$

D) $sinA = cosB$

30. Find the hypotenuse of the right-angle triangle. When sides are 3 and 4.

A) 4

B) 5 (Answer)

C) 6

D) 7

31. The Law of Cosines is useful when:

A) Only one side is known

B) No angles are known

C) Two sides and included angle are known (Answer)

D) Graphing lines

32. Which software can graph equations?

A) Word

B) Excel

C) GeoGebra (Answer)

D) Paint

33. The graph of $y = x^2$ is a:

A) Circle

B) Parabola (Answer)

C) Triangle

D) Straight line

34. The vertex of a parabola is:

A) Highest or lowest point (Answer)

B) Midpoint

C) Intercept

D) Gradient

35. Find the mean of $2, 4, 6, 8$

A) 4

B) 5 (Answer)

C) 6

D) 8

36. Find the median of $1, 3, 5, 7, 9$

A) 3

B) 5 (Answer)

C) 7

D) 9

37. Find the mode of $2, 2, 3, 4, 4, 4$

A) 2

B) 3

C) 4 (Answer)

D) No mode

38. Which graph is best for comparing categories?

A) Pie chart

B) Histogram

C) Bar chart (Answer)

D) Scatter plot

39. Standard deviation measures:

A) Shape

B) Center

C) Spread of data (Answer)

D) Total

40. Which graph is best for showing parts of a whole?

A) Pie chart (Answer)

B) Histogram

C) Line graph

D) Table

41. Probability values are between:

A) 1 and 10

B) −1 and 1

C) 0 and 1 (Answer)

D) 0 and 100

42. A coin is tossed once. The probability of heads is:

A) 0

B) $\frac{1}{2}$ (Answer)

C) 1

D) 2

43. How many outcomes are possible when rolling one die?

A) 4

B) 5

C) 6 (Answer)

D) 8

44. Permutations are used when:

A) Order matters (Answer)

B) Order does not matter

C) Graphing

D) Measuring angles

45. Combinations are used when:

A) Order matters

B) Order does not matter (Answer)

C) Solving triangles

D) Finding averages.

46. What is the domain of $y = \sqrt{x}$?

A) x ≥ 0 Answer

B) x ≤ 0

C) All real numbers

D) x = 0

47. Which axis is horizontal?

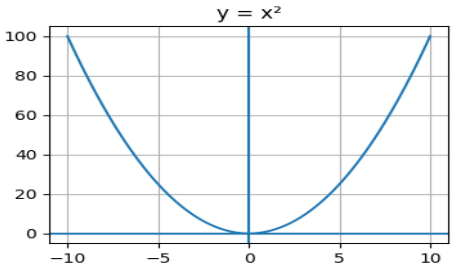
A) y-axis

B) x-axis Answer

C) z-axis

D) Origin

48. What is the shape of the graph below?



A) Line

B) Parabola Answer

C) Circle

D) Triangle.

49. What is the range $of\ y = x^2$?

A) All real numbers

B) y ≥ 0 Answer

C) y ≤ 0

D) x ≥

50. Which axis is vertical?

A) x-axis

B) y-axis Answer

C) Origin

D) Number line

51. What is the y-intercept of y = x + 4?

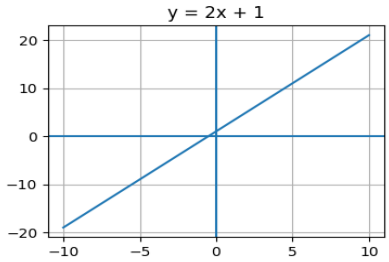
A) 1

B) 4 Answer

C) 0

D) -4

52. The graph below represents which type of equation?



A) Linear Answer

B) Quadratic

C) Circular

D) Exponential

53. The point where the axes meet is called:

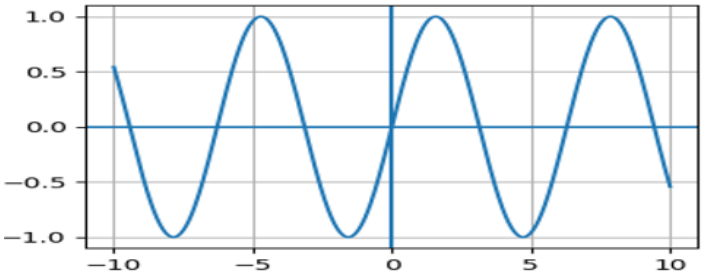
A) Vertex

B) Range

C) Origin Answer

D) Domain

54. What type of graph is shown below?



A) Straight line

B) Sine wave Answer

C) Circle

D) Parabola

55. A graph moving upward from left to right is:

A) Increasing Answer

B) Decreasing

C) Constant

D) Undefined

56. What is the domain of y = 1/x?

A) x = 0

B) All real numbers except 0 Answer

C) All real numbers

D) $x \geq 0$

57. What is the range of $y = \sqrt{x}$?

A) All real numbers

B) $y \geq 0$ Answer

C) $y \leq 0$

D) $x \geq 0$

58. Which graph represents a quadratic function?

A) Straight line

B) Parabola Answer

C) Circle

D) Histogram

59. The highest or lowest point of a parabola is called the:

A) Slope

B) Vertex Answer

C) Origin

D) Axis

60. What is the slope of a horizontal line?

A) 1

B) 0 Answer

C) Undefined

D) 2