High School Math

Study Guide

133 questions

1.) Linear Inequalities

Solve:

$3x + 4 > 16$

Answer: $x > 4$

2.) Slope

Find the slope of the line that passes through (1,2) and (4,10).

Answer: $m = 8/3$

3.) Solving Linear Equations

Solve for x:

$4x-7=13$

Answer: $x = 5$

4.) Factoring Quadratics

Factor:

$x^2 - 7x + 10$

Answer: $(x - 2)(x - 5)$

5.) Systems of Equations

Solve the system:

$x+y=7, x-y=3x$

Answer: x = -7 and y = 14

6.) Absolute Value Equations

Solve:

$|2x-4|=8$

Answer: x = 6 and x = -2

7.) Arithmetic Sequences

Find the 10th term of the sequence: 3,6,9,12,...

Correct Answer: 30

8.) Exponential Growth

A population doubles every year. If the initial population is 200, what will it be after 3 years?

Correct Answer: 1600

9.) Area of a Circle

Find the area of a circle with a radius of 7 cm. Use $\pi=3.14$.

Answer: r = 7

10.) Pythagorean Theorem

A triangle has legs of 9 cm and 12 cm. What is the hypotenuse?

Answer: 15

11.) Volume of a Sphere

Find the volume of a sphere with a radius of 3 cm. Use π=3.14.

Answer: 113.04 cm^3

12.) Mean, Median, Mode

The test scores of a class are: 85,92,75,85,90. What is the mode?

Answer: 85

13). Compound Probability

A bag contains 3 red, 5 blue, and 2 green marbles. What is the probability of selecting a red marble, and then without putting it back, selecting a green marble?

Answer: 1/15

14.) Scatterplots

What type of correlation exists in a scatterplot where points slope upward from left to right?

- **A)** Positive correlation
- **B)** Negative correlation
- **C)** No correlation
- **D)** Undefined correlation

Correct Answer: A) Positive correlation.

15.) Conditional Probability

If a student is selected at random from a group of 20 students, including 12 girls and 8 boys, what is the probability the student is a boy

Answer: 2/5

16.) Solving Quadratic Equations

Solve:

$x^2-4x-5=0$

Answer: x = 5 or x = 1

17.) Exponential Decay

A car depreciates in value by 10% per year. If the initial value is $25,000, what is its value after 3 years?

- **A)** $22,500
- **B)** $18,225
- **C)** $20,000
- **D)** $19,665

Correct Answer: B.) $18,225

19.) Complex Numbers

Simplify:

(3 + 2i) + (4 − 5i)

Answer: 7 - 3i

20.) Linear Equations

What is the equation of a line that passes through the point (2,3)with a slope of 4?

Answer: y = 4x - 5

21.) Quadratic Formula

Solve $2x^2 - 3x - 5 = 0$ using the quadratic formula.

Answer: x = 2.5 and x = -1

22.) Exponential Growth

The value of a car decreases by 20% each year. If its initial value is $25,000, what is its value after 2 years?

Answer: $16,000

23.) Logarithms

Solve:

$\log_5(125) = x$

Answer: x = 3

24.) Mean

The test scores are: 78, 85, 92, 88, 87. What is the mean?

Answer: 86

25.) Probability

What is the probability of rolling a 4 on a fair 6-sided die?

Answer: 1/6

26.)

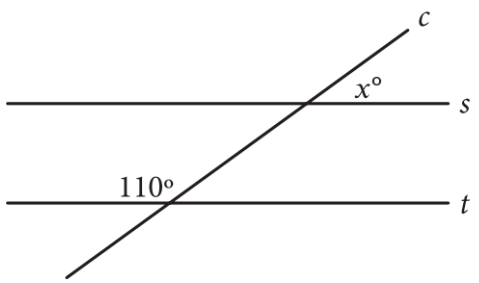
$$g(x) = x^2 + 55$$

What is the minimum value of the given function?

A) 0
B) 55
C) 110
D) 3,025

Answer: B) 55

27.)

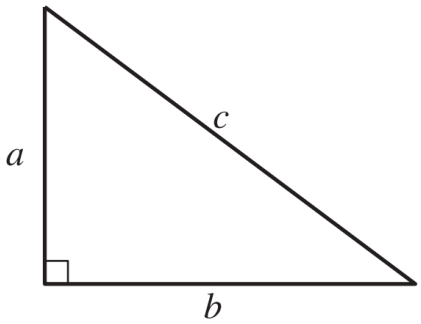


Note: Figure not drawn to scale.

In the figure shown, line c intersects parallel lines s and t. What is the value of x ?

Answer: x = 70 degrees

28.)



Note: Figure not drawn to scale.

For the right triangle shown, $a = 4$ and $b = 5$.
Which expression represents the value of c ?

A) $4 + 5$

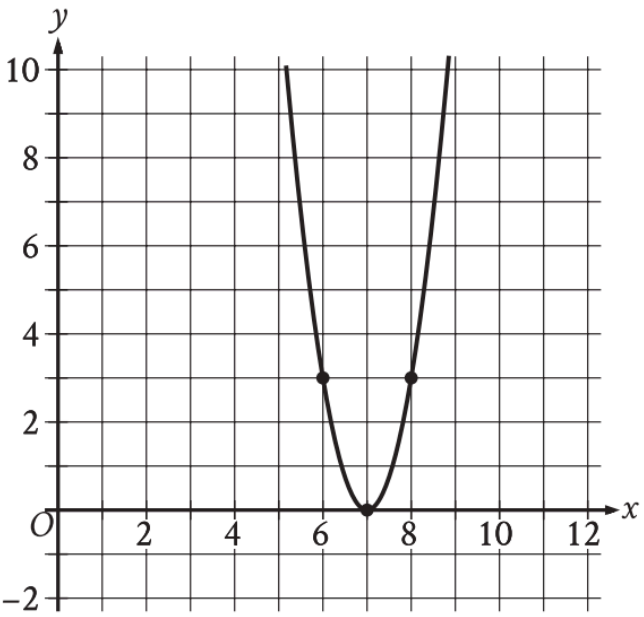
B) $\sqrt{(4)(5)}$

C) $\sqrt{4 + 5}$

D) $\sqrt{4^2 + 5^2}$

Answer: D.) D) $\sqrt{4^2 + 5^2}$

29.)



The x-intercept of the graph shown is $(x, 0)$. What is the value of x ?

Answer: 7

30.)

A painter will paint n walls with the same size and shape in a building using a specific brand of paint. The painter's fee can be calculated by the expression $nK\ell h$, where n is the number of walls, K is a constant with units of dollars per square foot, ℓ is the length of each wall in feet, and h is the height of each wall in feet. If the customer asks the painter to use a more expensive brand of paint, which of the factors in the expression would change?

A) h

B) ℓ

C) K

D) n

Answer: C.) K

31.)

The cost of using a telephone in a hotel meeting room is \$0.20 per minute. Which of the following equations represents the total cost c, in dollars, for h hours of phone use?

A) $c = 0.20(60h)$

B) $c = 0.20h + 60$

C) $c = \frac{60h}{0.20}$

D) $c = \frac{0.20h}{60}$

Answer: A.)

32.)

Tickets for a school talent show cost \$2 for students and \$3 for adults. If Chris spends at least \$11 but no more than \$14 on x student tickets and 1 adult ticket, what is one possible value of x ?

Answer: x = 4, or x = 5

Algebra (25 Questions)

1. **What is the term for a polynomial with a degree of 2?**
   a) Linear
   b) Quadratic
   c) Cubic
   d) Quartic
   Correct Answer: b) Quadratic

2. **What is the term for the set of all possible input values of a function?**
   a) Range
   b) Domain
   c) Codomain

d) Output
Correct Answer: b) Domain

3. **What is the term for a symbol used to represent an unknown value?**
   a) Variable
   b) Constant
   c) Coefficient
   d) Operator
   Correct Answer: a) Variable

4. **What is the term for a number that divides evenly into another number?**
   a) Factor
   b) Product
   c) Term
   d) Quotient
   Correct Answer: a) Factor

5. **What is the term for a mathematical statement containing an equals sign?**
   a) Equation
   b) Expression
   c) Inequality
   d) Polynomial
   Correct Answer: a) Equation

6. **What is the term for the highest power of a variable in a polynomial?**
   a) Coefficient
   b) Degree
   c) Exponent
   d) Term
   Correct Answer: b) Degree

7. **What is the term for the steepness of a line?**
   a) Slope
   b) Intercept
   c) Vertex
   d) Axis
   Correct Answer: a) Slope

8. **What is the term for the point where a graph crosses the y-axis?**
   a) x-intercept
   b) y-intercept
   c) Vertex
   d) Origin
   Correct Answer: b) y-intercept

9. **What is the term for the solution to a system of equations?**
   a) Coefficient
   b) Intercept
   c) Intersection
   d) Constant
   Correct Answer: c) Intersection

10. **What is the term for a function that reverses another function?**
    a) Inverse function
    b) Composite function
    c) Quadratic function
    d) Linear function
    Correct Answer: a) Inverse function

11. **What is the term for a pair of numbers written as (x, y)?**
    a) Slope
    b) Ordered pair
    c) Vertex
    d) Quadrant
    Correct Answer: b) Ordered pair

12. **What is the term for a number in front of a variable in an expression?**
    a) Coefficient
    b) Constant
    c) Factor
    d) Term
    Correct Answer: a) Coefficient

13. **What is the term for the process of writing a polynomial as a product of factors?**
    a) Simplifying
    b) Expanding
    c) Factoring
    d) Subtracting
    Correct Answer: c) Factoring

14. **What is the term for an inequality that includes ≤ or ≥?**
    a) Strict inequality
    b) Non-strict inequality
    c) Quadratic inequality
    d) Absolute inequality
    Correct Answer: b) Non-strict inequality

15. **What is the term for a number not connected to a variable in an equation?**
    a) Variable
    b) Term
    c) Constant
    d) Coefficient
    Correct Answer: c) Constant

16. **What is the term for the distance between a number and zero on the number line?**
    a) Absolute value
    b) Range
    c) Slope
    d) Magnitude
    Correct Answer: a) Absolute value

17. **What is the term for a function that increases at a constant rate?**
    a) Quadratic
    b) Exponential
    c) Linear
    d) Logarithmic
    Correct Answer: c) Linear

18. **What is the term for a set of numbers that follow a specific order or pattern?**
    a) Series
    b) Sequence
    c) Domain
    d) Range
    Correct Answer: b) Sequence

19. **What is the term for a sequence where the difference between terms is constant?**
    a) Arithmetic sequence
    b) Geometric sequence
    c) Fibonacci sequence
    d) Harmonic sequence
    Correct Answer: a) Arithmetic sequence

20. **What is the term for the reciprocal of a fraction?**
    a) Inverse
    b) Opposite
    c) Coefficient
    d) Reciprocal
    Correct Answer: a) Inverse

21. **What is the term for a function written as $f(x)=ax2+bx+cf(x) = ax^2 + bx + cf(x)=ax2+bx+c$?**

a) Linear function
b) Exponential function
c) Quadratic function
d) Logarithmic function
Correct Answer: c) Quadratic function

22. **What is the term for the point where the graph of a quadratic function reaches its maximum or minimum value?**
    a) Axis
    b) Vertex
    c) Focus
    d) Intercept
    Correct Answer: b) Vertex

23. **What is the term for a line that divides a graph into two symmetrical parts?**
    a) Axis of symmetry
    b) Slope
    c) Intercept
    d) Midpoint
    Correct Answer: a) Axis of symmetry

24. **What is the term for a constant ratio in a geometric sequence?**
    a) Common difference
    b) Common ratio
    c) Reciprocal
    d) Arithmetic mean
    Correct Answer: b) Common ratio

25. **What is the standard form of a linear equation?**
    a) y=mx+b
    b) ax+by=c
    c) y=ax2+bx+c
    d) y=abx
    Correct Answer: b) ax+by=c

Geometry (25 Questions)

26. **What is the term for a closed two-dimensional figure with straight sides?**
    a) Line
    b) Polygon
    c) Circle
    d) Ellipse
    Correct Answer: b) Polygon

27. **What is the term for a triangle with all three sides of different lengths?**
    a) Scalene triangle
    b) Isosceles triangle
    c) Equilateral triangle
    d) Right triangle
    Correct Answer: a) Scalene triangle

28. **What is the term for a line segment that connects two points on a circle?**
    a) Radius
    b) Diameter
    c) Chord
    d) Tangent
    Correct Answer: c) Chord

29. **What is the term for a straight path that touches a circle at exactly one point?**
    a) Secant
    b) Tangent
    c) Radius
    d) Diameter
    Correct Answer: b) Tangent

30. **What is the term for the longest side of a right triangle?**
    a) Leg
    b) Hypotenuse
    c) Altitude
    d) Median
    Correct Answer: b) Hypotenuse

31. **What is the term for a three-dimensional object with a circular base and a vertex?**
    a) Cone
    b) Cylinder
    c) Sphere
    d) Pyramid
    Correct Answer: a) Cone

32. **What is the term for a quadrilateral with two pairs of parallel sides?**
    a) Rectangle
    b) Trapezoid
    c) Parallelogram
    d) Rhombus
    Correct Answer: c) Parallelogram

33. **What is the term for the point where medians of a triangle intersect?**
    a) Centroid
    b) Circumcenter
    c) Orthocenter
    d) Incenter
    Correct Answer: a) Centroid

34. **What is the term for the amount of space inside a three-dimensional object?**
    a) Perimeter
    b) Area
    c) Volume
    d) Surface area
    Correct Answer: c) Volume

35. **What is the term for a quadrilateral with exactly one pair of parallel sides?**
    a) Rectangle
    b) Trapezoid
    c) Square
    d) Kite
    Correct Answer: b) Trapezoid

36. **What is the term for a line segment that passes through the center of a circle and connects two points on its circumference?**
    a) Radius
    b) Diameter
    c) Chord
    d) Secant
    Correct Answer: b) Diameter

37. **What is the term for the measure of the total surface of a three-dimensional object?**
    a) Area
    b) Volume
    c) Surface area
    d) Perimeter
    Correct Answer: c) Surface area

38. **What is the term for the point where perpendicular bisectors of a triangle meet?**
    a) Centroid
    b) Circumcenter
    c) Orthocenter
    d) Incenter
    Correct Answer: b) Circumcenter

39. **What is the term for an angle that measures exactly 90 degrees?**
    a) Acute angle
    b) Obtuse angle
    c) Right angle
    d) Straight angle
    Correct Answer: c) Right angle

40. **What is the term for two angles whose measures add up to 180 degrees?**
    a) Complementary angles
    b) Supplementary angles
    c) Vertical angles
    d) Adjacent angles
    Correct Answer: b) Supplementary angles

41. **What is the term for a polygon with all sides and angles equal?**
    a) Regular polygon
    b) Irregular polygon
    c) Quadrilateral
    d) Trapezoid
    Correct Answer: a) Regular polygon

42. **What is the term for a parallelogram with four right angles and opposite sides equal?**
    a) Rhombus
    b) Rectangle
    c) Square
    d) Trapezoid
    Correct Answer: b) Rectangle

43. **What is the term for the set of points that are equidistant from a center point?**
    a) Ellipse
    b) Circle
    c) Polygon
    d) Triangle
    Correct Answer: b) Circle

44. **What is the term for the point where all the altitudes of a triangle meet?**
    a) Orthocenter
    b) Centroid
    c) Circumcenter
    d) Incenter
    Correct Answer: a) Orthocenter

45. **What is the term for the ratio of the circumference of a circle to its diameter?**
    a) Radius
    b) Area
    c) Pi (π)
    d) Chord
    Correct Answer: c) Pi (π)

46. **What is the term for an angle that measures less than 90 degrees?**
    a) Acute angle
    b) Obtuse angle
    c) Right angle
    d) Straight angle
    Correct Answer: a) Acute angle

47. **What is the term for a line that divides a figure into two equal, symmetrical parts?**
    a) Median
    b) Altitude
    c) Axis of symmetry
    d) Chord
    Correct Answer: c) Axis of symmetry

48. **What is the term for a prism with a circular base?**
    a) Sphere
    b) Cone
    c) Cylinder
    d) Pyramid
    Correct Answer: c) Cylinder

49. **What is the term for a triangle with one angle measuring more than 90 degrees?**
    a) Acute triangle
    b) Right triangle
    c) Obtuse triangle
    d) Scalene triangle
    Correct Answer: c) Obtuse triangle

50. **What is the term for a polygon with eight sides?**
    a) Hexagon
    b) Heptagon
    c) Octagon
    d) Decagon
    Correct Answer: c) Octagon

Statistics (25 Questions)

51. **What is the term for the middle number in a set of data?**
    a) Mean
    b) Median
    c) Mode
    d) Range
    Correct Answer: b) Median

52. **What is the term for the number that appears most frequently in a set of data?**
    a) Mean
    b) Median
    c) Mode
    d) Range
    Correct Answer: c) Mode

53. **What is the term for the average of a set of numbers?**
    a) Mean
    b) Median
    c) Mode
    d) Range
    Correct Answer: a) Mean

54. **What is the term for the difference between the highest and lowest values in a data set?**
    a) Mean
    b) Median
    c) Mode
    d) Range
    Correct Answer: d) Range

55. **What is the term for a graph that uses bars to represent data?**
    a) Line graph
    b) Bar graph
    c) Scatter plot
    d) Histogram
    Correct Answer: b) Bar graph

56. **What is the term for a type of graph that shows how data is distributed across intervals?**
    a) Line graph
    b) Pie chart
    c) Histogram
    d) Scatter plot
    Correct Answer: c) Histogram

57. **What is the term for the likelihood of an event occurring?**
    a) Probability
    b) Mean
    c) Data
    d) Range
    Correct Answer: a) Probability

58. **What is the term for a diagram that shows all possible outcomes of an event?**
    a) Bar graph
    b) Probability tree
    c) Histogram
    d) Tree diagram
    Correct Answer: d) Tree diagram

59. **What is the term for data that can be measured and expressed in numbers?**
    a) Categorical data
    b) Qualitative data
    c) Quantitative data
    d) Descriptive data
    Correct Answer: c) Quantitative data

60. **What is the term for data that is divided into categories?**
    a) Numerical data
    b) Categorical data
    c) Quantitative data
    d) Continuous data
    Correct Answer: b) Categorical data

61. **What is the term for a graph that shows the relationship between two variables?**
    a) Pie chart
    b) Line graph
    c) Scatter plot
    d) Histogram
    Correct Answer: c) Scatter plot

62. **What is the term for a measure of how spread out a data set is?**
    a) Mean
    b) Variance
    c) Median
    d) Probability
    Correct Answer: b) Variance

63. **What is the term for the square root of the variance?**
    a) Standard deviation
    b) Range
    c) Mode
    d) Mean
    Correct Answer: a) Standard deviation

64. **What is the term for a number that represents a portion of a whole?**
    a) Fraction
    b) Percentage
    c) Decimal
    d) Probability
    Correct Answer: b) Percentage

65. **What is the term for a graph used to display parts of a whole?**
    a) Pie chart
    b) Bar graph
    c) Histogram
    d) Scatter plot
    Correct Answer: a) Pie chart

66. **What is the term for the total number of outcomes in a probability experiment?**
    a) Sample space
    b) Event
    c) Data set
    d) Range
    Correct Answer: a) Sample space

67. **What is the term for a collection of data or information?**
    a) Variable
    b) Population
    c) Data set
    d) Sample
    Correct Answer: c) Data set

68. **What is the term for a smaller group selected from a population?**
    a) Population
    b) Sample
    c) Set
    d) Data group
    Correct Answer: b) Sample

69. **What is the term for the difference between the predicted and actual values?**
    a) Error

b) Residual
c) Range
d) Deviation
Correct Answer: b) Residual

70. **What is the term for the total number of values divided by the number of values?**
    a) Mode
    b) Mean
    c) Median
    d) Range
    Correct Answer: b) Mean

71. **What is the term for a type of probability based on observations or experiments?**
    a) Theoretical probability
    b) Experimental probability
    c) Empirical probability
    d) Predictive probability
    Correct Answer: b) Experimental probability

72. **What is the term for an entire group being studied?**
    a) Data set
    b) Sample
    c) Population
    d) Category
    Correct Answer: c) Population

73. **What is the term for data arranged in ascending or descending order?**
    a) Ordered pair
    b) Organized data
    c) Data array
    d) Distribution
    Correct Answer: c) Data array

74. **What is the term for the process of estimating values between known data points?**
    a) Extrapolation
    b) Interpolation
    c) Prediction
    d) Range analysis
    Correct Answer: b) Interpolation

75. **What is the term for the entire range of values a variable can take?**
    a) Domain
    b) Data set

c) Probability
d) Variance

76. **Correct Answer:** a) Domain

Calculus (25 Questions)

76. **What is the term for the rate of change of a function?**
    a) Integral
    b) Derivative
    c) Function
    d) Limit
    Correct Answer: b) Derivative

77. **What is the term for the process of finding the derivative?**
    a) Integration
    b) Differentiation
    c) Summation
    d) Factorization
    Correct Answer: b) Differentiation

78. **What is the term for the area under a curve?**
    a) Integral
    b) Derivative
    c) Function
    d) Range
    Correct Answer: a) Integral

79. **What is the term for the process of finding the integral?**
    a) Differentiation
    b) Summation
    c) Integration
    d) Interpolation
    Correct Answer: c) Integration

80. **What is the term for a value that a function approaches but never reaches?**
    a) Slope
    b) Limit
    c) Tangent
    d) Continuity
    Correct Answer: b) Limit

81. **What is the term for a line that touches a curve at one point without crossing it?**
    a) Tangent
    b) Secant
    c) Chord
    d) Normal
    Correct Answer: a) Tangent

82. **What is the term for the opposite process of differentiation?**
    a) Summation
    b) Integration
    c) Division
    d) Multiplication
    Correct Answer: b) Integration

83. **What is the term for the slope of the tangent line to a curve?**
    a) Secant line
    b) Derivative
    c) Integral
    d) Limit
    Correct Answer: b) Derivative

84. **What is the term for a function whose derivative is given?**
    a) Antiderivative
    b) Integral
    c) Function
    d) Slope
    Correct Answer: a) Antiderivative

85. **What is the term for the highest point on a graph?**
    a) Minimum
    b) Maximum
    c) Inflection point
    d) Origin
    Correct Answer: b) Maximum

86. **What is the term for the lowest point on a graph?**
    a) Minimum
    b) Maximum
    c) Inflection point
    d) Origin
    Correct Answer: a) Minimum

87. **What is the term for a graph that has no breaks, holes, or gaps?**
    a) Discontinuous

b) Continuous
c) Secant
d) Tangent
Correct Answer: b) Continuous

88. **What is the term for a point where a graph changes direction from increasing to decreasing?**
a) Minimum
b) Maximum
c) Critical point
d) Slope
Correct Answer: c) Critical point

89. **What is the term for the derivative of velocity with respect to time?**
a) Speed
b) Acceleration
c) Force
d) Momentum
Correct Answer: b) Acceleration

90. **What is the term for the slope of a secant line?**
a) Average rate of change
b) Instantaneous rate of change
c) Integral
d) Tangent
Correct Answer: a) Average rate of change

91. **What is the term for a function that gives the area under the curve of another function?**
a) Antiderivative
b) Integral
c) Derivative
d) Limit
Correct Answer: b) Integral

92. **What is the term for a number where a function's derivative is zero?**
a) Critical point
b) Limit
c) Tangent
d) Origin
Correct Answer: a) Critical point

93. **What is the term for a point where a graph changes concavity?**
a) Inflection point

b) Tangent
c) Limit
d) Minimum
Correct Answer: a) Inflection point

94. **What is the term for a curve that represents a function's rate of change?**
a) Derivative
b) Integral
c) Function
d) Slope
Correct Answer: a) Derivative

95. **What is the term for a limit where the function approaches infinity?**
a) Finite limit
b) Infinite limit
c) Derivative
d) Continuity
Correct Answer: b) Infinite limit

96. **What is the term for a summation of infinitely many terms?**
a) Infinite sequence
b) Infinite series
c) Limit
d) Integral
Correct Answer: b) Infinite series

97. **What is the term for a region in the plane bounded by curves?**
a) Area
b) Volume
c) Domain
d) Integral region
Correct Answer: a) Area

98. **What is the term for the derivative of a derivative?**
a) Integral
b) Antiderivative
c) Second derivative
d) Limit
Correct Answer: c) Second derivative

99. **What is the term for a tangent line that approximates a curve near a point?**
a) Linear approximation
b) Antiderivative
c) Integration

d) Derivative
Correct Answer: a) Linear approximation

100. **What is the term for the derivative of a position function?**
a) Acceleration
b) Velocity
c) Force
d) Momentum
Correct Answer: b) Velocity