1. y = mx + b
2. πr² (Area of a circle)
3. x² - 5x + 6 = 0
4. d/dx x² = 2x (Basic derivative)
5. sin²(θ) + cos²(θ) = 1
6. √(-1) = i
7. |a+b| ≤ |a| + |b| (Triangle Inequality)
8. f(x) = x³ - 3x + 2
9. logₐ(x \* y) = logₐ(x) + logₐ(y)
10. (σ²) = Σ(xᵢ - μ)²/N (Variance of a population)
11. The slope of a line is Δy/Δx
12. A prime number is only divisible by 1 and itself
13. sin(θ) = opposite/hypotenuse
14. The sum of the interior angles of a polygon is (n-2)×180°
15. To solve a system of equations, you can use substitution or elimination
16. The discriminant of a quadratic equation indicates the nature of its roots
17. The LCM of two numbers is the smallest number that is a multiple of both
18. In a proportional relationship, the ratio between two quantities remains constant
19. An isosceles triangle has two sides of equal length
20. The compound interest formula calculates the amount of interest earned on an investment over time
21. The absolute value of a number is its distance from zero on the number line
22. An annulus is the region between two concentric circles
23. The sum of exterior angles of any polygon equals 360°
24. The nth term of an arithmetic sequence is given by aₙ = a₁ + (n-1)d
25. A parallelogram's opposite sides are equal in length and parallel
26. The exterior angle of a triangle is equal to the sum of the two opposite interior angles
27. A rhombus is a type of parallelogram with all four sides of equal length
28. The distance between two points (x₁, y₁) and (x₂, y₂) in a plane is given by √((x₂ - x₁)² + (y₂ - y₁)²)
29. The Law of Sines relates the lengths of the sides of a triangle to the sines of its angles
30. A geometric sequence is characterized by each term being a constant factor of the previous term
31. A convex polygon has all interior angles less than 180°
32. When two lines are cut by a transversal, corresponding angles are equal
33. The surface area of a cylinder is 2πrh + 2πr²
34. An exponential function has the form f(x) = a⋅b^x, where b is a positive constant
35. The sum of the interior angles of a hexagon is 720°
36. The interior angles of a parallelogram are supplementary to each adjacent angle
37. In an arithmetic sequence, the difference between consecutive terms is constant
38. The Pythagorean identity states that sin²θ + cos²θ = 1 for any angle θ
39. A quadratic equation can be solved by completing the square or using the quadratic formula
40. The ratio of the circumference of a circle to its diameter is π, regardless of the circle's size
41. The sum of the squares of the legs of a right triangle is equal to the square of the hypotenuse (Pythagorean theorem)
42. A rational number can be expressed as a fraction where both the numerator and the denominator are integers
43. The concept of slope describes the steepness and direction of a line, defined as rise over run
44. Compound interest is calculated by adding interest to the principal sum of a deposit or loan, compounding over time
45. The discriminant in a quadratic equation reveals the nature of its roots—whether they are real or complex
46. Similar triangles have the same shape but not necessarily the same size, illustrating the concept of similarity in geometry
47. The principle of mathematical induction is a powerful tool for proving statements about natural numbers
48. An irrational number cannot be expressed as a simple fraction, illuminating the diversity of number types
49. A tangent to a circle is perpendicular to the radius at the point of tangency, a key property in circle geometry
50. Logarithms are the inverse operation of exponentiation, linking multiplication and exponentiation to addition
51. The law of cosines generalizes the Pythagorean theorem for any triangle, not just right triangles
52. An annulus is the area of a ring-shaped object, calculated as the difference between the area of two circles
53. The concept of function composition, where one function's output becomes another function's input, demonstrates the chaining of mathematical operations
54. A scatter plot displays values for typically two variables for a set of data, providing

a visual representation of correlation

1. The binomial theorem describes the algebraic expansion of powers of a binomial, illustrating the power of algebraic formulas
2. The area of an ellipse is πab where a and b are the semi-major and semi-minor axes
3. The sum of any two sides of a triangle is greater than the third side
4. The volume of a cone is (1/3)πr²h
5. A cyclic quadrilateral is a quadrilateral with all its vertices on a single circle
6. The square root of a negative number is not defined in the set of real numbers
7. The area of a sector of a circle is ½r²θ where θ is in radians
8. The sum of any two angles in a cyclic quadrilateral is 180°
9. The product of the gradients of two perpendicular lines is -1
10. The volume of a pyramid is (1/3)Bh where B is the area of the base and h is the height
11. An angle inscribed in a semicircle is a right angle
12. The equation of a parabola with focus (a,b) and directrix y = k is (x-a)² = 4p(y-b)
13. The sum of the reciprocals of the roots of a quadratic equation ax² + bx + c = 0 is -b/a
14. The coefficient of x^n in the expansion of (a + b)^n is given by nCk a^(n-k)b^k
15. The harmonic mean of two numbers is 2ab/(a+b)
16. The remainder when a polynomial f(x) is divided by (x-a) is f(a)
17. The angle between two vectors a and b is cos⁻¹((a·b)/(|a||b|))
18. The area of a rhombus is 1/2(d1d2) where d1 and d2 are the lengths of the diagonals
19. The centroid of a triangle divides each median into segments with a ratio of 2:1
20. The equation of an ellipse with center at (h, k) is ((x-h)²/a²) + ((y-k)²/b²) = 1
21. The nth root of a product ab is equal to the nth root of a times the nth root of b
22. The lateral surface area of a cylinder is 2πrh
23. The diagonal of a cube is √3 times the length of a side
24. The sum of an infinite arithmetic series is given by S = a/(1 - r) where |r| < 1
25. Pascal's triangle is used to find the coefficients of the expansion of (a + b)^n
26. The interior angle of a regular polygon is (n-2)×180°/n where n is the number of sides
27. The volume of a frustum of a cone is (1/3)πh(r1² + r1r2 + r2²)
28. The ratio of the areas of two similar triangles is equal to the square of the ratio of their corresponding sides
29. The equation of a hyperbola with foci along the x-axis is (x²/a²) - (y²/b²) = 1
30. The sum of the interior angles of an n-sided convex polygon is (n-2)×180°
31. The surface area of a sphere is 4πr²
32. To find the inverse of a function f(x), solve the equation y = f(x) for x
33. The midpoint formula for the midpoint of a segment with endpoints (x1, y1) and (x2, y2) is ((x1+x2)/2, (y1+y2)/2)
34. The radius of the incircle of a triangle with sides a, b, c, and area T is T/s where s is the semiperimeter
35. The height of an equilateral triangle of side length a is √3/2 a
36. The area of a regular hexagon with side length a is (3√3/2)a²
37. The volume of a torus is (πr²)(2πR) where r is the radius of the tube and R is the distance from the center of the tube to the center of the torus
38. The distance formula in 3D space for points (x1, y1, z1) and (x2, y2, z2) is √((x2-x1)² + (y2-y1)² + (z2-z1)²)
39. The lateral surface area of a pyramid is 1/2pl where p is the perimeter of the base and l is the slant height
40. The equation of a circle in parametric form is x = r cos(t) and y = r sin(t)
41. The sum of the exterior angles, one at each vertex, of any polygon is 360°
42. A line segment bisected by the perpendicular bisector is divided into two equal parts
43. The volume of a hemisphere is (2/3)πr³
44. The equation of a line in point-slope form is y - y1 = m(x - x1)
45. The area of a kite is 1/2(d1d2) where d1 and d2 are the lengths of the diagonals
46. If two angles of one triangle are congruent to two angles of another triangle, the triangles are similar
47. The equation for calculating interest compounded annually is A = P(1 + r/n)^(nt)
48. The arc length of a circle is θr where θ is the central angle in radians
49. The surface area of a rectangular prism is 2lw + 2lh + 2wh
50. A line parallel to the x-axis has an equation of the form y = k
51. The base angles of an isosceles triangle are equal
52. The trapezoidal rule is used to approximate the integral of a function.