

Algebra Formula Quiz

Name: _____

Date _____ Class _____

1. What are the steps to clear your calculator? 2nd, +, 7, 1, 2, enter.

2. Standard Form: $Ax + By = C$

- a. A cannot be negative.
- b. A, B, C cannot be a negative #.

3. What do you do to the slope of Perpendicular lines? flip and change sign.

4. Quadratic Formula: $\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

- a. Look for x^2 . It will ask you to find roots, zeros, solutions, x-intercepts, vertex, minimum, maximum, axis of symmetry, discriminant, or y-intercept.
- b. Set equal to y or 0, which is the same, and then graph.
- c. The vertex is known as the minimum or maximum.
- d. The Quadratic Formula is used to find the roots; also called zeros, solutions, or x-intercepts.
- e. The parabola makes a U shape.
- f. Axis of Symmetry is always the x value of the minimum or maximum.
- g. Axis of Symmetry formula: $x = -b/2a$
- h. Discriminant: $b^2 - 4ac$. Tell the number of roots.
- i. Roots are where the parabola crosses the x-axis.
- j. Methods for finding the roots: factoring, graphing, completing the square, square roots, quadratic formula.
- k. To find the roots on the calculator: 2nd, trace, #2, Left Bound, enter, Right Bound, Enter, Enter.
- l. You can also find the y-intercept, which will be (0, c).

5. What do you know about the slope of 2 lines that are parallel? same slope

6. Systems of equations (2 equations)

- a. Can use graphing, elimination, or substitution.
- b. If lines cross, there is 1 solution, which is where they intersect.
- c. To find that solution, you use the following steps on the graphing calculator: 2nd, Calc, 5, enter, enter, enter. This will give you the (x, y).
- d. If parallel line, there is 0 solution.
- e. If the same line, there are ∞ solutions.

↓
infinitely many

7. Inequalities

- a. Must be in form of $y = mx + b$.
- b. If it is $>$ or \geq , shade top / right the line.
- c. If it is $<$ or \leq , shade bottom / left the line.

8. Exponents: a) Multiplying with like bases: keep the base and add the exponents
 b) Divide with like bases: keep the base and subtract the exponents.

9. Slope Formula: $m = \frac{y_2 - y_1}{x_2 - x_1}$
 a. Slope is also known as rate of change.
 b. Slope Intercept Form: $y = mx + b$
 c. $b =$ y-intercept
 d. $m =$ slope
 e. Slope means rise/run (2 words) – used to graph
 f. EQUATION MUST ALWAYS BE IN THE FORM OF: $y = mx + b$
 g. Point-Slope formula: $y - y_1 = m(x - x_1)$; used when given point and slope. (DUH, thus the name of it)

10. Pythagorean Theorem: ONLY used with right triangles.
 a. The largest side is the hypotenuse which is across from the right angle.
 b. The formula: $a^2 + b^2 = c^2$
 c. Can also be used if asked to find the diagonal of a square.

11. Rational vs. Irrational
 a. Rational: can be written as a fraction; the decimal must repeat or terminate
 i. Give two examples of a rational number $-\frac{1}{2}$ / $2.2\bar{3}$
 b. Irrational: cannot be written as a fraction; it goes on forever; there is no repeating; think of π .
 i. Give two examples of an irrational number $2.1367\bar{7}$ / $-4.3489\dots$

12. Functions
 For a set of numbers to be a function, the x value can not repeat.
 When using the vertical line test, the pencil must only touch the graph 1 time.
 Domain is the x values and called the independent variables.
 Range is the y values and called the dependent variables.

13. Linear means straight line and an example of an EQUATION would be $y = 3x + 4$.

14. Nonlinear means it is not straight and an example of an EQUATION would be $y = x^2 + 2$; $y = x^3$

15. Factor the following polynomial using whatever method preferred (rainbow, box, grouping, etc.): $4x^2 + 26x - 48 = 0$

$(2x - 3)(2x + 16) = 0$
 $2x - \frac{3}{1} = 0$ $2x + \frac{16}{1} = 0$
 $\frac{2x}{2} = \frac{3}{2}$ $\frac{2x}{2} = \frac{-16}{2}$
 $x = \frac{3}{2}$ $x = -8$

	$2x$	16	
$2x$	$4x^2$	$32x$	$M: -192x^2$ $A: 26x$
-3	$-6x$	-48	

$1 \quad 192$
 $2 \quad 96$
 $3 \quad 64$
 $4 \quad 49$
 $-6x \quad 32x$
 $8 \quad 24$
 $12 \quad 16$

* 16. Geometry

a. Area

i. Triangles: $A = \frac{bh}{2}$

ii. Rectangles/Squares: $A = LW$

b. Volume: the inside of the container; what it takes to fill it up.

i. Rectangular Prisms: $V = LWH$

ii. Cubes: $V = s^3$

iii. Cylinders: $V = \pi r^2 h$

iv. Cones: $V = \frac{1}{3} \pi r^2 h$

v. Spheres: $V = \frac{4}{3} \pi r^3$

vi. Hemispheres: $V = \frac{4}{3} \pi r^3 \div 2$

17. Repeating Decimals to Fractions:

a. Write the numbers that are repeating in the numerator (top).

b. Place 9's in the denominator (bottom). **The number of 9's depends on the number of digits repeating.

c. Simplify your fraction.

18. Scatter Plots

a. Positive Correlation: goes up from left to right.

b. Negative Correlation: goes down from left to right.

c. No Correlation: are not in a line; the points are scattered.

d. The line that can be drawn between the dots is called the line of best fit; or often referred to as the trend line.

* 19. Dilation

a. When you see the words dilation or scale factor, you should Multiply the scale factor by each ordered pair.

b. If the scale factor is less than one, the diagram gets smaller.

c. If the scale factor is greater than one, the diagram gets larger.

20. Growth and Decay/Exponential Functions

Growth formula: $y = a(1+r)^t$ (shows an increase)

Decay formula: $y = a(1-r)^t$ (shows a decrease)

* 21. "Find the length" are key words that should tell you to use the distance formula to solve the problem.

* 22. Halfway or exactly between are key words that tell you to use the midpoint formula for solving.

* 23. Midpoint Formula: $\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$

* 24. Distance Formula: $c = \sqrt{(y_2 - y_1)^2 + (x_2 - x_1)^2}$ or use pythagorean theorem to find the hypotenuse.

25. Line of Best Fit: ALWAYS use the graphing calculator

- The information will be in a table, or look for the key words line of best fit, or linear regression, or just the word linear.
- If given years, always begin at 0.
- To find the Line of Best Fit on the graphing calculator, use the following keys: Stat, Edit, L1, L2, Calc, #4, enter, enter.

26. With Rational exponents, the numerator becomes the exponent of the base and the denominator becomes the number inside the radical

$$\sqrt[3]{\frac{x^1}{1}} = x^{\frac{1}{3}}$$

↑
base

27. If given a Radical number, the number exponent of the base becomes the numerator (top) of the fractional exponent, and the number inside the radical symbol becomes the denominator (bottom)