Algebra 1 Study Guide

From Simple Studies, https://simplestudies.edublogs.org & @simplestudies4 on Instagram

This study guide includes non-rigorous proofs and practice problems to help build the foundation for future math topics past memorization. Sources of images and information are at the end of the document.

Table of Contents

How to Use Your Graphing Calculator

- **Scatter plot:**

1. [2nd][Y=] "STAT PLOTS", Plot1 ON, choose Scatter Plot Icon
2. Go to Y1 and [Clear] any functions
3. Go to [STAT] [1: edit]. Enter your data in L1 and L2. Highlight L1 or L2 and press [CLEAR] to clear values in a column.
4. To graph points, press [Zoom][9: ZoomStat]
5. Press [TRACE] and the arrow keys to jump between data points to see their (x,y) coordinates. The x and y coordinates will be at the bottom of the screen.

- **Lines**

1. Press [Y=] and add your equations. Un-highlight "Plot 1".
2. Press [2nd][GRAPH] to look at the table of x and y-values for each line.
3. Press [GRAPH] to graph your lines

- **Tables**

1. Press [2nd] [WINDOW] to get to the screen on the right
2. Specify size of increments with **Δ**Tbl=.
3. Add lines in Y1, Y2, Y3...etc (press [Y=])
4. [2nd] [graph] to access table and add values
5. If you have a specific x or y-value in mind, go back to [2nd] [WINDOW] and change AUTO /ASK for the independent or dependent variable. Remember to change it back!

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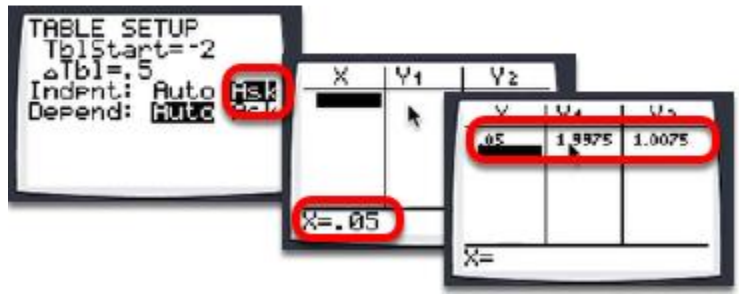
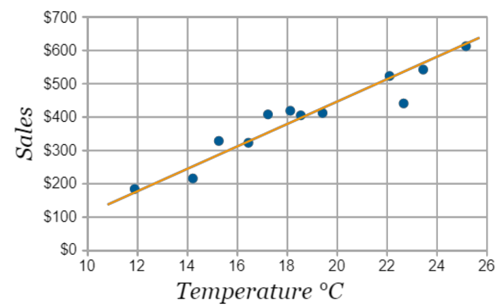
- **Linear Regression:** Often used to find the line of best fit when you have a scatterplot or table of points

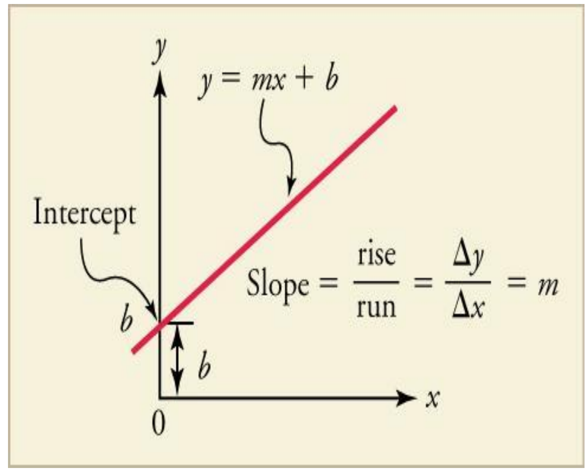


1. Follow the instructions in the Scatter Plot section to make a table of points.
2. Press [STAT][CALC][4: LinReg(ax+b)]
3. You'll get your slope and y-intercept. (a & b respectively)

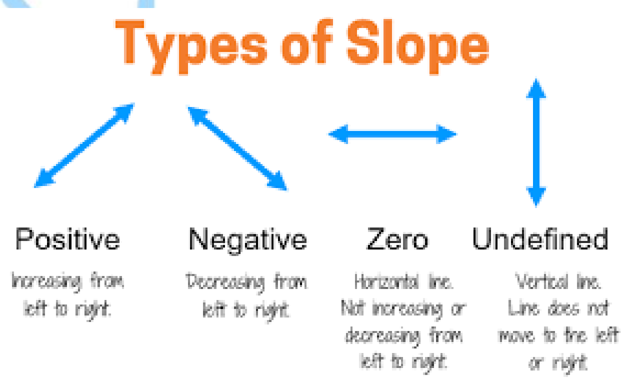


Explaining Slopes and Lines: The Complexity of Lines

- **Explaining the diagram (right) of a line with the y=mx+b equation**
  - Slope (m) or the ratio of rise/run is constant! The red line intercepts with the y-axis at (0,b)
    - The y-intercept is b
    - The slope of a line can help determine how a line will look before graphing (in the above diagram, the slope is positive)



- **The diagram "Types of Slope" explains negative, positive, zero, or undefined slopes and how they look like.**
- **Positive slope**
  - Starting from the left, the y-values increase to the right.



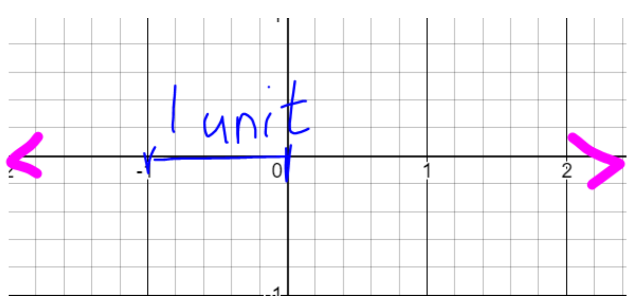
- **Negative slope**
  - Starting from the left, y-values decrease going to the right.
- **Zero slope**
  - Horizontal Line
  - There is no change in the y-values as x-values change.
- **Undefined slope**

    - The y-values do not move right or left. The slope is undefined because all of the points on the line have the same x-coordinate.

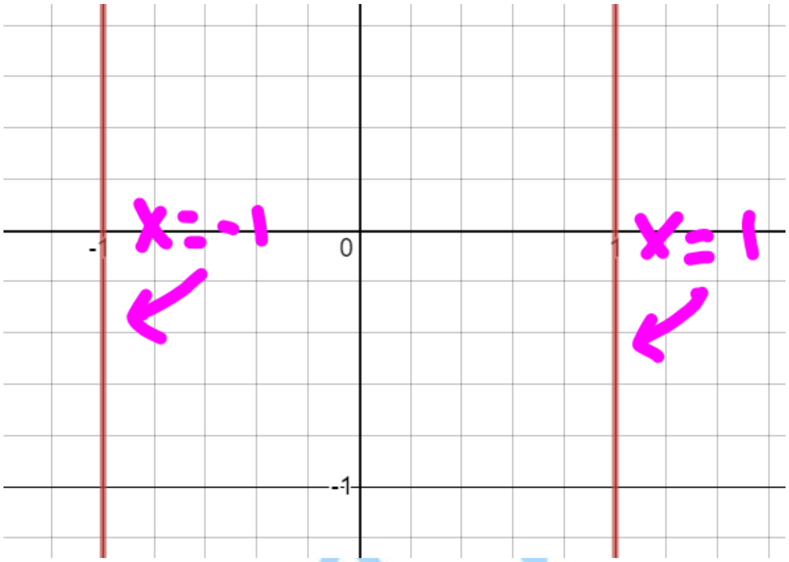
Each Line has a Unique Equation, But May Be Written Many Ways

- **Slope-intercept form**: y=mx+b
- **Point slope form**: Used commonly when you have one set of points and slope.
    - Derived from the definition of slope: $\frac{\Delta y}{\Delta x} = \frac{y2-y1}{x2-x1} = m$
        - Rearrange definition to $y - y1 \ = \ m(x - x1)$ where (x, y) is a general set of points along the line.
- **General Form**: Ax +By=C
    - Notice that "B" here is different from the "b" in the slope-intercept form.

Absolute Value Equations: Measure the Distance Traveled, Not Your Current Location

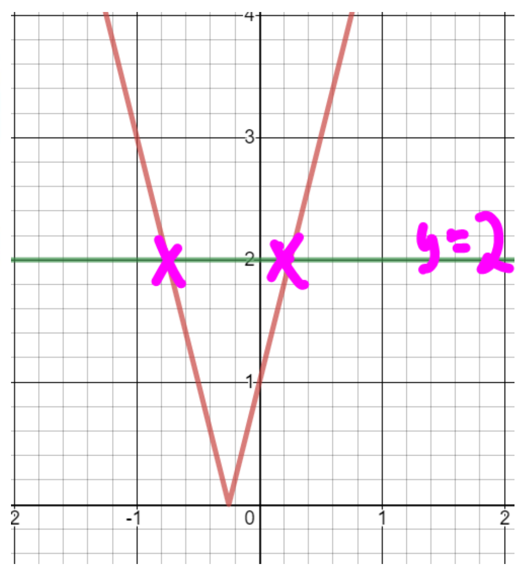
- When there are absolute value bars around an expression, you want to find the distance between 0 and that expression.
    - **EX 1:** |-1| means the distance from -1 to 0, which would be "1".
        - 

- **EX 2:** If we are solving for x in |x| = 1, we are looking for x-values that are 1 unit away from 0. x = 1 and x = -1 both fit this criteria.



- **EX 3:** 2=|4x+1|
  - **Premise:** In the graph (right), y=|4x+1| is in red. We are trying to find x-values where y=|4x+1| meets y=2.
  - **To solve:** Remove the absolute value sign from the original equation. We are left with

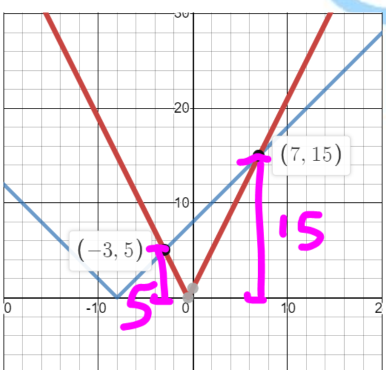
    -2 = 4x+1 and 2 = 4x+1. x= -¾, ¼.
  - **Check** to see if the answers make sense. If we plug in x= -¾ to the original problem 2=|4x+1|, it's 2=|-2|, which is correct! x=¼ also works, because 2=2 is correct!



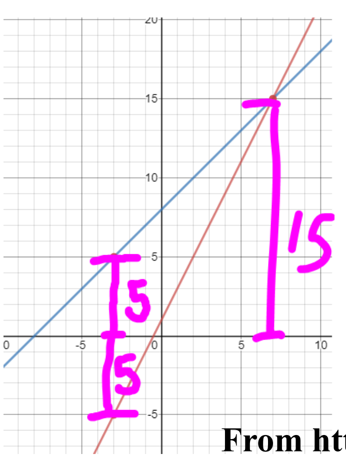
- **EX 4: Absolute value on Both Sides:** |2x+1| = |x+8|

- **Premise:** We are trying to find x-coordinates where y=2x+1 and y=x+8 are the same distance away from the x-axis (y=0).

- After you remove the absolute value, you can make either side negative.
  - **x+8 = -(2x+1)** and x+8=2x+1 OR **-(x+8) = 2x+1** and x+8 = 2x+1
    - The bolded equations are the same. -1 is just multiplied in one and divided in the other (Multiplication and Division Properties of Equality).
- Plug in final x-values back in to check your work.
  - Our final x-values are x=-3, 7. When we plug them into the original equation |2x+1| = |x+8|, we get 5=5 and 15=15. Both are correct!
- **Explaining the Final Answer with Graphs**



  - In the diagram (left), we have the two equations with absolute values. They both are 5 units away from the x-axis when x=-3. When x=7, both are 15 units away from the x-axis.



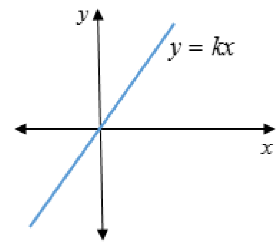
  - Without absolute values (right), at x=-3, one line is 5 units positive and the other line is 5 units negative of the x-axis. Direction doesn't matter, as long as the distance is the same. And distance is the same at x=-3 and x=7.

Inverse and Direct Relationships: Correlation Not Causation

- **Direct variation**

  As the value of x increases, the value of y increases

  General equation: y=kx where k is a constant

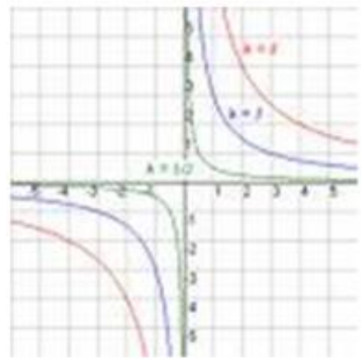


- **Inverse variation**

  As the value of x increases, the value of y decreases

  General equation: y = k/x where k is a constant

  Notice the asymptotes at x=0 and y=0



  - x=0: As x-values get closer to 0, y-values get closer and closer to infinity, although never reaches infinity
  - y=0: As x-values get closer to -/+ infinity, y-values get closer and closer to 0, although never reaches 0.

- When we apply **transformations** to the original parent function y=1/x or inverse variation y=a/x, we get y=a/(x-h)+k. The graph of y=a/x-h + k is called a hyperbola.

How to Graph Hyperbolas and Inverse Variations

Function	Vertical asympt-ote	Horizontal Asymptote	Domain (range of x-values)	Range (of y-values)	Applying Vertical Shrink/Stretch to Parent Function y=1/x
y=a/x	x=0	y=0	All real numbers (ARN) except x=0	ARN except y=0	If |a| > 1, apply a vertical stretch to y=1/x. If 0< |a|<1 , there is

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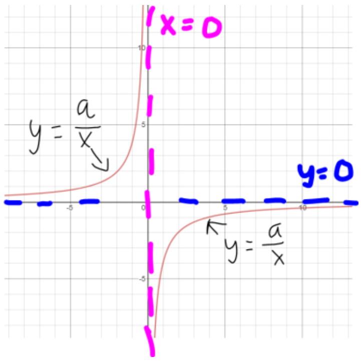
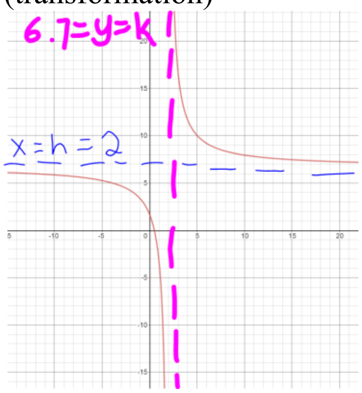
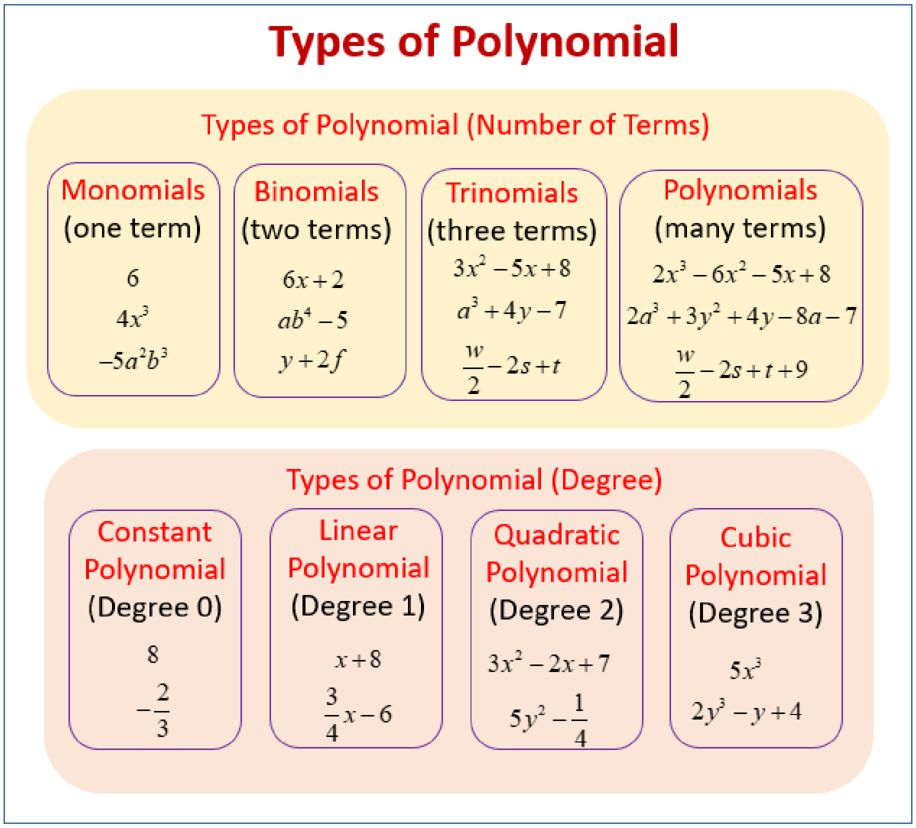
					a vertical shrink. If a is negative, then the graph reflects over x-axis.
y=a/(x-h) + k (transformation) 	x=h	y=k	ARN except x=h	ARN except y=k	If |a| > 1, apply a vertical stretch to y=1/x. If 0< |a|<1 , there is a vertical shrink. If a is negative, then the graph reflects over x-axis.

Rational Functions: Complicated Fractions

- The functions we looked at in the last section (y=a/x and y=a/(x-h)+k) are examples of rational functions. **Rational functions** have polynomials as numerators and denominators. If you were to plug in numbers, the denominator CANNOT be 0; Anything divided by zero is undefined.
    - A rational function is one polynomial divided by another. What exactly is a polynomial?

- In Algebra 1, we sometimes refer to equations like Ax^2+Bx+C as polynomials, but there are a variety of other expressions that also count as polynomials. Take a look at this table:



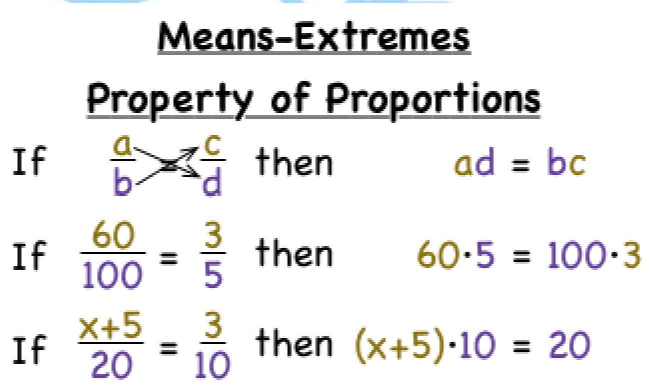
- From the table above, we see that polynomials can have many different terms or variables. They can also have no visible variables and only constants. Constants like “8” are degree 0 polynomials because of the special property of zeroth exponents: 8*(x^0) = 8.
    - For y=a/x (our inverse variation function), it’s a rational function because the numerator is a constant polynomial and the denominator is a linear one. y=a/(x-h)+k often counts as a rational function too even though there’s the extra “+k”.

- Add and Subtract Rational Functions (Polynomials in numerator and denominator)
  - Find a common denominator
  - EX: $\frac{3}{(x-9)}+\frac{2x}{(x^2-81)}$
    - To find a common denominator, we need to factor.
    - $\frac{3}{(x-9)}+\frac{2x}{(x-9)(x+9)}$
      - Notice how both fractions share (x-9) in their denominators. The first rational function doesn't have (x+9)in the denominator. We need to multiply 3/(x-9) by 1 or (x-9)/(x-9) to get common denominators.
    - $\frac{3(x+9)}{(x-9)(x+9)}+\frac{2x}{(x-9)(x+9)}$
    - Now, like normal operations with fractions without variables, we can add and distribute.
      - $\frac{3(x+9)+2x}{(x-9)(x+9)}=\frac{5x+27}{(x-9)(x+9)}$
      - You can leave the denominator as (x-9)(x+9) unless polynomial form is preferred.
- Multiply and Divide
  - Try to find numbers to cancel out. It may be helpful to combine the two fractions to easily find common numbers in the numerator and denominator.
  - Like fractions without variables
  - $\frac{25}{6}*\frac{3}{10}=\frac{5*5*3}{2*3*2*5}=5/4$

- EX with rational functions: [(x-9)(x-3)]/(x-2) * (x^2 - 4)/[(x-3)(x-5)]
- = [(x+2)(x+9)]/(x+5)
- Use the same method for division except flip the num/denominator of the second rational function.
    - (a/b)/(c/d) * (d/c)/(d/c) = (a/b)*(d/c)

Proportions

■ Cross products

- $\frac{a}{b} = \frac{c}{d}$
    - Multiply both sides by "bd" and the resulting equation will be ad=bc. Thus, $\frac{a}{b} = \frac{c}{d}$ can be rewritten as ad=bc. The following diagram shows the Cross-product Rule with examples.
- 

System of Equations

- **Question:** What is the difference between expressions vs equations?

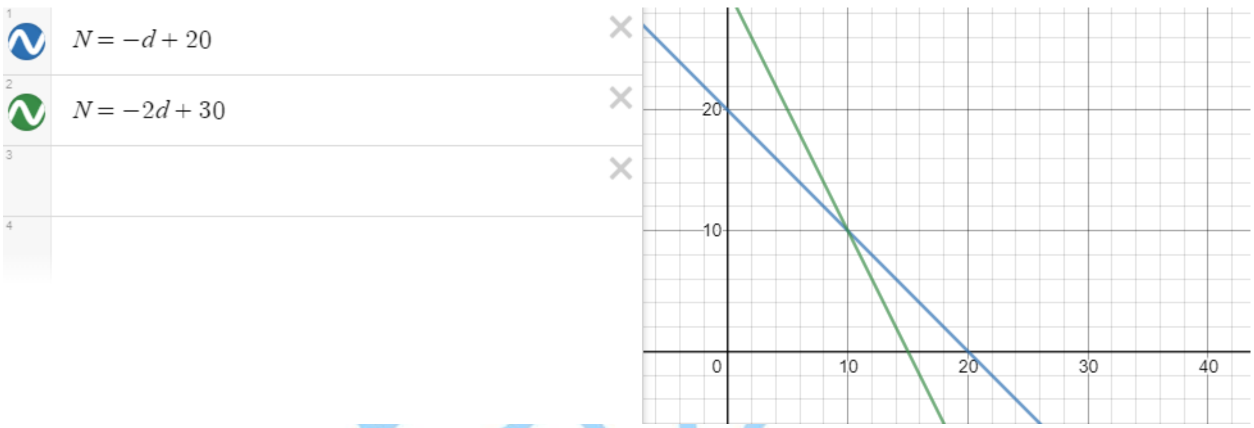
- **Answer:** Expressions are a collection of constants, coefficients, variables, and operation signs. Equations have equal signs (as the name implies) and are made of two expressions.

- **Generic System of Equations Problem:** Sally has a coin purse full of nickels and dimes. She has 20 coins in total and $1.50 in total. How many nickels and dimes are in her purse?
  - Find equations/define variables
    - n = total number of nickels, d = total number of dimes
  - Number your equations. In the Equation (1), "20" is in cents. $1.50 also needs to be in cents in Equation (2) to keep the units consistent.
    - (1) $n + d = 20$
    - (2) $5n + 10d = 150$
    - Understanding these equations
      - (1) The total number of nickels (n) and dimes (d) is 20 coins.
      - (2) Each nickel is worth 5 cents, multiplied by the total number of nickels (n) is the total monetary value of nickels in cents. Simply put, nickels are worth "5n" cents. Same goes for dimes. So, in Sally's coin purse, there is "5n" cents worth of nickels and "10d" cents worth of dimes. The total monetary value is 150 cents.

After you define your equations and variables, you can choose from THREE (probably more) methods to solve.

Method 1 Graphing: Each equation has a graphical representation. Find the intersection (solution) of all the equations on the graph.

- How to graph the equations (2 ways)
    - Solve for a single variable (we'll solve for n). If equations are 1st degree, put them in y-intercept form to easily graph.
    - Just make a table and plug in points.
        - N= -d + 20
        - N = -2d + 30
        - Find intersection point



- The intersection is at (10,10). We can conclude that Sally has 10 nickels and 10 dimes in her coin purse.

- Comments: Graphing is a time-consuming and sometimes inaccurate method to solve systems of equations. We have to get the equation in the correct format or plug in a large quantity of points. Often, the numbers aren't as neat as shown here.

- **Method 2 Substitution:** The general idea is to create a single-variable equation, which is easier to solve.

  We will use the same equations (1) and (2)

    - (1) n + d = 20

- (2) 5n + 10d = 150

If we subtract n on both sides of Equation (1), we get d = 20 - n. Our goal is to make the variable in Equation (2) “n”, so there’s only one variable to solve. We can substitute d=20-n for the variable d in Equation (2).

d=20-n	Subtraction POE
5n+10d=150	Equation (2)
5n+10(20-n)=150	Substitution d for 20-n because they are equivalent
5n+200-10n=150	Distributive POE
-5n=-50	Combine Like Terms and Subtraction POE
n=10	Division POE
d=20-(10) d=10	Plug in n=10 and find d
5(10)+10(10)=150 150=150	Check work by plugging back in the other equation. It checks out!

- **Method 3 Subtracting/Adding Equations:** Manipulate the equations so when you add and subtract them, things cancel out.

n+d=20 5n+10d=150	Equation (1) and (2)
5(n+d)=5(20) 5n+10d=150	Multiply Equation (1) by 5
5n+5d=100 5n+10d=150	Distributive POE

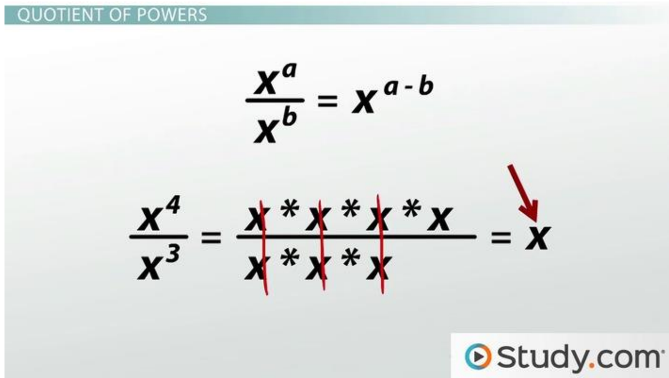
5n+10d=150 -(5n+5d=100) 0n+5d=50	Subtract (2) - (1). Note: Excuse the messy handwriting. Some of the zeros have a line through them and some do not.
5d=50	Simplify
d=10	Division POE
n+10=20 n=10	Substitution and Subtraction POE
5(10)+10(10)=150 150=150	Check with the other equation. It checks out!

- **Notice how we got the same answer (10 dimes and 10 nickels) for all three! We just covered three methods to solve systems of equations.**

Exponents: Bacteria Growth and Neon Atoms

- **Subtracting Exponents**
  - **General Rule:** (x^a)/(x^b) = x^(a-b)
  - **EX:** What is (x^4)/(x^3)?

- **Work/Solution:** (x^4)/(x^3) = x^(4-3) = x^1 = x



x*x*x*x*x*x*x = x^(7) = x^(3+4)

x^3

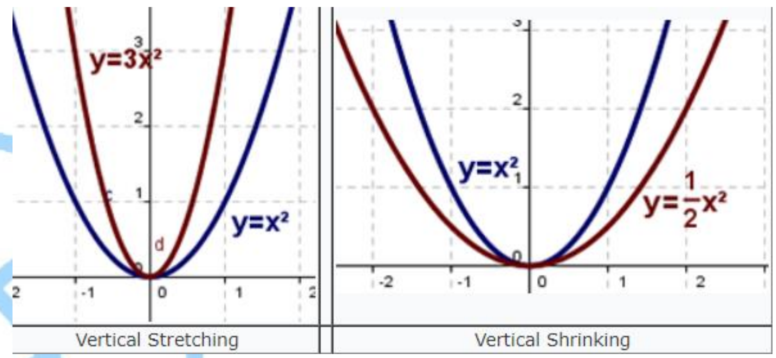
● The diagram above proves the general rule used for subtracting exponents. If we expand x^4 = x*x*x*x in the numerator and x^3 = x*x*x in the denominator, many x's cancel out, and we are left with just "x".

- **Adding Exponents**
  - **General Rule:** x^a * x^b = x^(a+b)
  - **EX:** What is x^3 * x^4?
    - In the diagram above, we expanded both exponential terms, x^3 and x^4. When we multiply x^3 by x^4, we are actually multiplying "x*x*x" by "x*x*x*x". The answer is "x*x*x*x*x*x*x" or x^7. Writing out all the x's is very tedious when we're looking at exponents like x^50 or y^1000. To make it easier, we just add the two exponents. However, the above diagram is still a great proof to explain why the general rule works.
    - **Simple Work/Solution:** x^3*x^4 = x^(3+4) = **x^7**
- **Square Roots and Exponents can Be Fractions**

    - $\sqrt{\ }$ = x^(1/a): **General Rule**
- **Exponents to the power**
    - **General Rule:** (x^a)^b = (x^b)^a=x^(ab)

- **Exponential decay and growth of y=a*b^x**
    - Exponential decay is when b is a fraction less than 1 but greater than 0.
    - Exponential growth is when b is greater than 1.
- **Scientific notation**
    - Did you know that the entire earth has about 7,500,000,000,000,000,000 grains of sand? That's pretty cool, but there has to be an easier way to write such numbers, right? Yes, there is! It's called scientific notation. Scientists use it all the time when talking about large numbers like the Milky Way galaxy's diameter or tiny numbers like the size of an electron.
    - I won't get into the complicated rules of scientific notation since you'll learn them in chemistry, but it's good to know a few things.
        - Scientific Notation is in **base 10**
        - It uses a whole number from 0-9 and a base 10 exponent
            - For example instead of that long number for the number of sand grains, we could say it's 7.5*10^18 grains of sand. That's much easier to write and read.
                - It's also easier to do calculations and compare numbers in scientific notation.

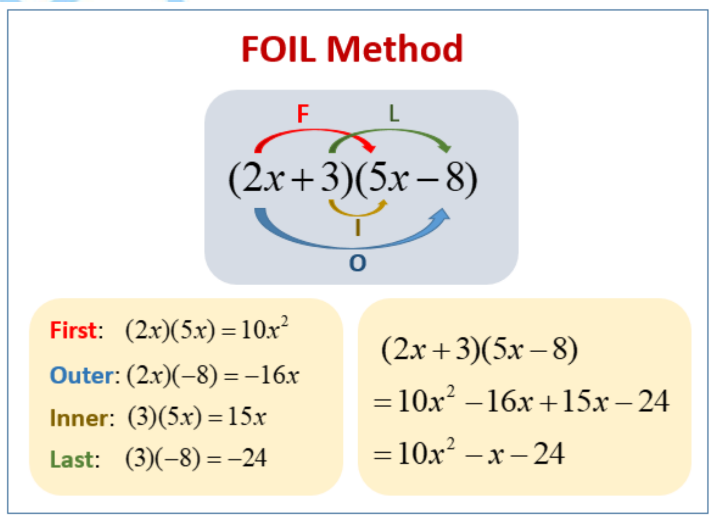
- **Quadratics:** The Power of 2
    - **General Form:** y=Ax^2 + Bx + C
- **Parent Quadratic Function:** y=x^2
- Let's apply transformations to the parent quadratic function:
    - "A" in y=Ax^2+Bx+C
        - If a>0, the graph has a minimum value. (smiley face)
        - If a<0, the graph has maximum value. (frowny face)
        - If 0<|a|<1, the graph has a vertical shrink, where y-values change more slowly than the parent function.



        - If |a|>1, the graph has a vertical stretch, where y-values change rapidly compared to the parent function.
    - "B" in y=Ax^2+Bx+C
        - The constant B can change where the graph is centered and how the graph stretches/shrinks.
    - "C" in Ax^2+Bx+C
        - The value of C determines where the quadratic function intersects with the y-axis. The y-intercept is (0,C).

- **Four Methods to Solve Quadratic Equations**

- **Factoring**
  - **Change $Ax^2+Bx+C=y$ to $(Dx+E)(Fx+G)=y$ format**
  - EX 1: Factor $x^2 + 6x + 5$.
    - First identify factor(s) of A (1 only). Next, identify the factors of C (1 and 5).
    - Try finding coefficient B by multiplying one factor of A and C. Add that product to another factor of A times factor of C.
    - Then, check to see if the B coefficient is 6: $(x+1)(x+5) = x^2 + 1x + 5x + 5 = x^2 + 6x + 5$. The B coefficient is 6. With more practice, you'll find patterns and the progress will be quicker.
  - **FOIL: the reverse of factoring**
    - In order to return to general form, we need to use the FOIL method to multiply. FOIL stands for first, outer, inner, and last. FOIL basically reminds us to multiply each term of one factor by each term of another factor.



- **Quadratic Formula**
  - Where did the quadratic formula come from? Although at first glance, it may seem random, it's actually derived from the general form of a quadratic equation: Ax^2 + Bx + C = 0. If you solve for x on one side, the other side of the equation would be the quadratic formula! Search it up to see a more rigorous proof.

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

  - Using discriminant b^2-4ac
    - In the quadratic formula, the b^2-4ac expression is inside the square root.
    - Check the discriminant before solving to get a general idea of how many roots to expect.
    - What are roots?
      - Roots are x-value solutions when a quadratic equation equals zero.

What the Discriminant Means

Value	b^2-4ac>0	b^2-4ac =0	b^2-4ac < 0
# of Roots	Two real roots	One real root	Two imaginary roots
Explanation	The square root will have +/- solutions	The square root will be 0.	Square root of negative discriminant

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- **Special properties**
  - (ax)^2+2abx+b^2 = (ax+b)^2
  - EX: (3x+1)^2 = (3x)^2+6x+1 = 9X^2+6x+1

        - Notice A=9 and C=1 are perfect squares.
    - a^2 - b^2 = (a-b)(a+b)
        - These two expressions are equivalent because if we expand (a-b)(a+b) out, we'll get a^2 **+ 2ab -2ab** -b^2. When the bolded terms subtract out, a^2 - b^2 remains.

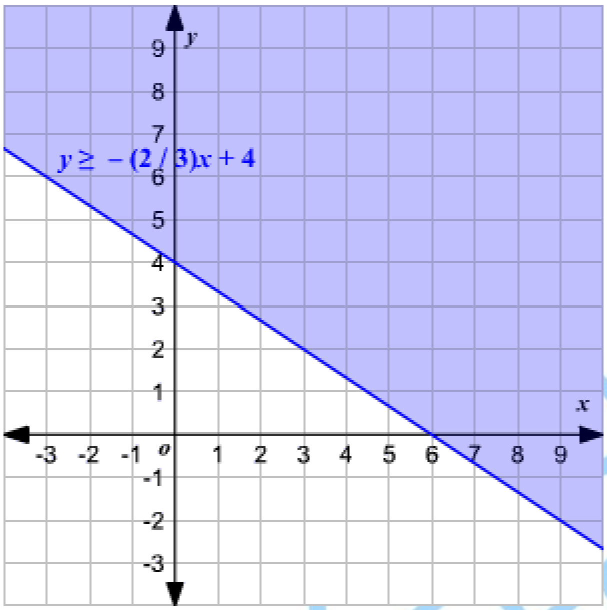
Compare Power, Exponential, Linear, Quadratic Models

- Power vs exponential
    - Exponential: variable is the exponent (y=a*(b^x)
    - Power: variable is the base number (y=a*(x^b))
- Linear
        - In point slope, standard form, y-intercept form
            - Point slope form is $y-y_1=m(x-x_1)$. It's called point slope form because all you need to do is use a point on the line and the line's slope to write it in this form.
            - Standard form is Ax+By=C , many of your system of equations will likely be in this form
            - Y-intercept form is y=mx+b where (0,b) is the y-intercept.
- Quadratic
- General Form: Ax^2+Bx+C and parent function is y=x^2.

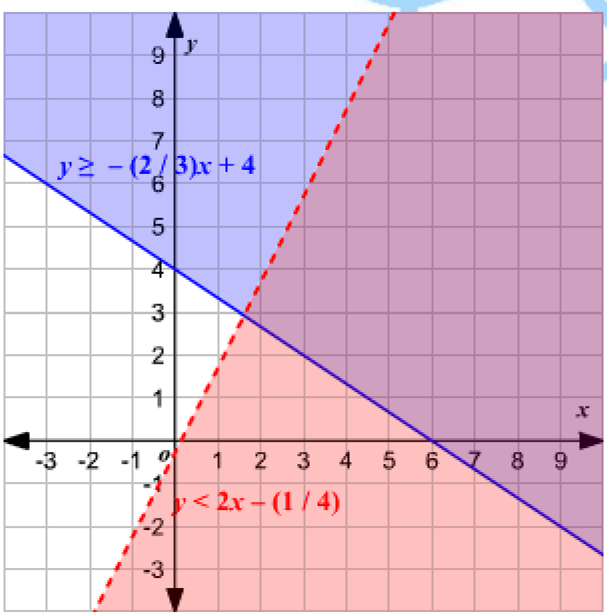
Inequalities

- Basics: y>=x means for this function, all y values are equal to or greater than x
    - (-) divide/multiply
        - When you divide or multiply negative constants for inequalities, you need to change the sign of the inequality.
        - We flip the inequality sign because numbers are ordered that way
            - For example, 10>5 but when we divide it by -1, -10>-5 is not true. So, we need to flip the inequality to be -10 < -5 now that's true!
- Graphing on a number line
    - When $x \leq a$, the domain is (-∞, a] with a closed circle at x=a.
    - When $x \geq a$, the domain is [a, ∞) with a closed circle at x=a.
    - Use closed circles for "<" and ">" because the domain excludes x=a.
- Graphing in two dimensions (coordinate system)
    - y > mx+b
        - Shade above the line y=mx+b.
        - Use a dotted line for "<" and ">"
    - Y < mx+b
        - Shade below the x-axis.
        - Make a dotted line with "<" and ">"
    - If unsure where to shade, graph the line without the inequality sign, and test points above and below.
- Graphing Two Lines and Finding An Overlap

- ○ Graph the 1st line (Line A) but replace the inequality sign with an equal sign. Identify a point above and below Line A. Plug in those points into your original inequality. Do points below or above Line A make the inequality true? Shade in that region.



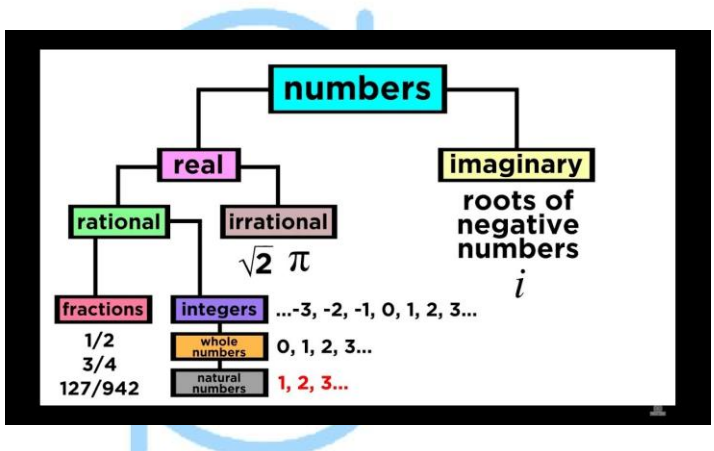
- Do the same for Line B on the same graph, preferably in a different color.



When to Check for Extraneous Solutions

- Radicals (square roots, cube roots etc)
  - Make sure the final answer does not have imaginary numbers, if they're not accepted.
- Denominators with variables
  - Denominators cannot be 0, because anything divided by zero is undefined!
- When a problem asks for time...
  - Time cannot be negative!

Different Number Types: Yes, There's a Difference Between Whole and Rational.



- **ALL Numbers**
  - **Real:** All numbers without "i" or square root of a negative number
    - **Rational:** A number that ends or repeats itself.
      - <u>Fractions:</u> A number that can be represented with a numerator over a denominator.
      - <u>Integers:</u> negative or positive numbers with increments of 1 from 0
        - Whole Numbers: positive numbers with increments of 1 from 0

        - Natural Numbers: Whole numbers but 0 is excluded.
    - **Irrational:** cannot be written as a fraction. An infinite, non-repeating number. Includes pi, square root of 2, etc.
- **Imaginary:** we will sometimes use “i” in solutions to quadratic equations and square roots.

How to Solve An Algebra 1 Problem

1. Read question and identify question
2. Write out variables and constants and any related formulas
3. Draw a diagram or graph or table
4. Solve step-by-step

- EX p. 937 from McDougal Littell Algebra 1
    - **Step 1: Read the problem and identify the question.**
        - Question: How old is Bob’s son?
    - **Step 2: Step up variables, equations, and any formulas that apply.**
        - B = Bob’s initial age
        - S = Son’s initial age
        - B= 55
        - 2(S+5) = B+5
    - **Step 3: Solve step-by-step**

        - 2 (S + 5) = 55+5   Substitute B=55
        - 2S+10 = 60   Distributive Property of Equality (POE)
        - 2S = 50   Subtraction POE
        - S = 25   Division POE
        - Bob's son is 25 years old when Bob is 55.
    - **Step 4: Check your work!**
        - **Plug into original equation**
            - 2(S+5)=B+5
            - 2(25+5) = 55+5
            - 60 = 60
        - **Use common sense**
            - Right now, Bob is 55 and his son is 25. In five years, Bob will be 60 and twice as old as his 30-year old son.

Further Study

- **Miscellaneous topics in Algebra 1 not covered here:**
    - Midpoint Formula, Pythageoren's Theorem, Distance Formula
    - Polynomial Division
    - Basics of Statistics
    - Graphing Power and Root Functions

Sources:

- **How to Use a Calculator**
  - Scatter Plot: https://studenthelp.cpm.org/m/TI-84/l/95292-ti-84-setting-up-a-scatter-plot
  - Tables: https://studenthelp.cpm.org/m/TI-84/l/95556-ti-84-using-tables
  - Line of Best Fit: **https://www.mathsisfun.com/definitions/line-of-best-fit.html**
- **Explaining Slopes and Lines**
  - https://www.texasgateway.org/resource/23-position-vs-time-graphs
  - https://www.katesmathlessons.com/slope.html
- **Inverse and Direct Relationships**
  - https://www.onlinemathlearning.com/direct-variation-algebra-2.html
  - https://slideplayer.com/slide/9111856/
- **Polynomials**
  - https://www.onlinemathlearning.com/introduction-polynomial.html
- **Proportions**
  - http://virtualnerd.com/algebra-1/linear-equations-solve/means-extremes-proportion-property-definition
- **Systems of Equations**
  - https://courses.lumenlearning.com/prealgebra/chapter/identifying-expressions-and-equations/#:~:text=y%20minus%20three.-,Expressions%20and%20Equations,connected%20by%20an%20equal%20sign.

- **Quadratics**
    - http://www.emathematics.net/parabola1.php?a=2&tipo=completa
    - https://www.onlinemathlearning.com/multiply-binomials.html
- **Exponents**
    - https://www.npr.org/sections/krulwich/2012/09/17/161096233/which-is-greater-the-number-of-sand-grains-on-earth-or-stars-in-the-sky#:~:text=They%20said%2C%20if%20you%20assume,quintillion%2C%20five%20hundred%20quadrillion%20grains.
- **Inequalities**
    - http://mathcentral.uregina.ca/QQ/database/QQ.09.01/sean1.html
    - https://www.varsitytutors.com/hotmath/hotmath_help/topics/graphing-systems-of-linear-inequalities
- **Types of Numbers**
    - https://www.youtube.com/watch?v=QUGmwPwtbpg
- Whole Document: McDougal Littell Algebra 1 and Desmos Graphing Calculator