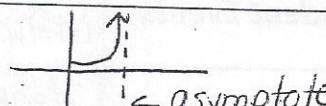
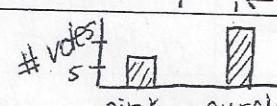
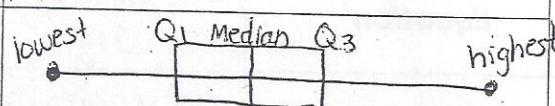
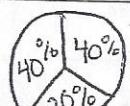


# Keystone Algebra 1 Exam

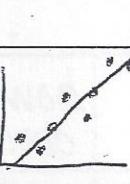
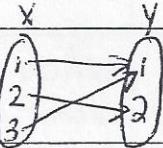
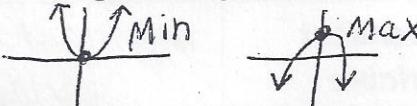
## Vocabulary and Examples

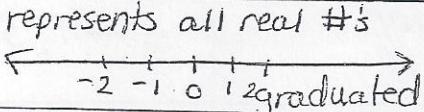
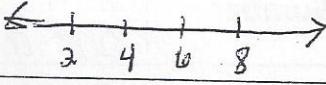
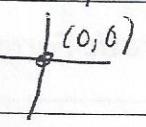
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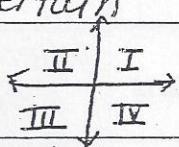
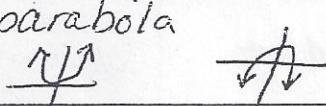
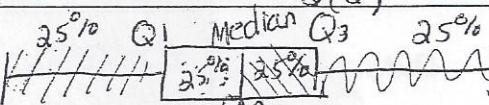
<u>Word</u>	<u>Definition</u>	<u>Example</u>
<b>Absolute Value</b>	distance from zero on a number line	$ 5  = 5$ $ -5  = 5$
<b>Additive Inverse</b>	opposite of a number that makes sum zero	$4 + (-4) = 0$ ↖ additive inverse
<b>Arithmetic Sequence</b>	ordered list that increases or decreases (+/-) at constant rate	1, 7, 13, 19... +6 everytime
<b>Asymptote</b>	dashed line that a graph approaches but never touches	
<b>Bar Graph</b>	graph that uses height of bars to show frequencies	# votes  pink      purple
<b>Binomial</b>	a polynomial with TWO unlike terms	$3x + 4y$ or $a^3 - 4b^2$
<b>Box and Whisker Plot</b>	graph that shows the distribution of data	lowest      Q1      Median      Q3      highest 
<b>Circle Graph (Pie Chart)</b>	Diagram whose angles are proportional to frequency	$= 100\%$ or $\frac{360}{ }$ 
<b>Coefficient</b>	#, or constant, in front of or mult. by a term	$35x^2$ ↖ coefficient
<b>Combination</b>	an unordered arrangement order does NOT matter, don't count twice	$XYZ \rightarrow$ pairs of two: $XY, YZ, XZ$
<b>Complex Number</b>	sum of a real # and imaginary # ( $i$ )	$a + bi$ $3 + \sqrt{-1}$ $2 - 3i$
<b>Composite Number</b>	natural # with more than two factors (1 & itself)	$6 \rightarrow 1, 2, 3, 6$ ↖ composite      ↖ factors
<b>Compound Event</b>	two or more events involved	Flipping two or more coins

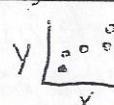
<b>Compound Inequality</b>	two or more inequalities written together w/ and/or "or"	$x > 6 \text{ and } x < 12$ "or" $6 < x < 12$
<b>Constant</b>	a fixed value, no variable	$a \# : 4, -6, \frac{3}{4}$
<b>Coordinate Plane</b>	plane formed by perpendicular # lines	
<b>Cube Root</b>	what times itself 3 times $\sqrt[3]{x}$	$\sqrt[3]{27} = 3$ $\sqrt[3]{x^4} = x\sqrt{x}$
<b>Degree (of a Polynomial)</b>	value of the greatest exponent in a polynomial	$3x^6 - 2x^2 + x - 5$ degree = 3
<b>Dependent Events</b>	outcome of one event influences the other(s)	drawing cards <u>without</u> replacement
<b>Dependent Variable</b>	depends on other variable, output #	# is dependent variable with <u>time</u> worked
<b>Domain (of a function)</b>	all possible independent Variable values, x's	(1,2)(3,1)(4,5) $x: \{1, 3, 4\}$
<b>Equation</b>	an expression with an = sign	$x + 5 = 7$
<b>Estimation</b>	an approximation based on judgement; guess	$457.998 \approx 458$
<b>Exponent (or Power)</b>	what a base is raised to $5^3$ exponent	$2^3 = 2 \cdot 2 \cdot 2$
<b>Exponential Equation</b>	equation with variables as exponents	$4^x = 50$ solved with logs
<b>Exponential Growth/Decay</b>	increases/decreases by same exponential factor over time	population growth inflation
<b>Expression</b>	math phrase that includes operations, #'s, variables	numeric = $4 \cdot 3 - 3 \cdot 3$ algebraic = $2x + 3y$
<b>Factor</b>	part of a product, factor $\times$ factor = product divides evenly	b is a factor of 30

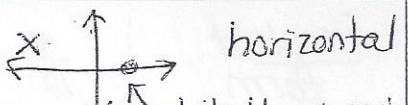
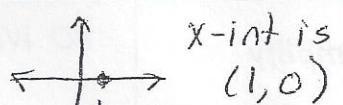
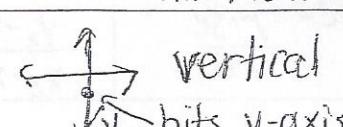
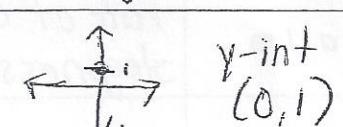
<b>Frequency</b>	how often something occurs	# of times an event occurs $\rightarrow$ team wins
<b>Function</b>	each input ( $x$ ) has one output ( $y$ ), consistent	$\text{total} \rightarrow y = 8x + 300$ \$ per hr ↑ hrs $\nwarrow$ \$ in savings
<b>Fundamental Counting Principle</b>	multiple to find all possible ways/ combinations	sandwiches: 3 cheeses 4 meats $3 \cdot 4 = 12$ possible combinations
<b>Geometric Sequence</b>	ordered list w/ constant ratio between terms ( $x/\div$ )	1, 7, 49, 343... $\times 7$ everytime
<b>Greatest Common Factor (GCF)</b>	largest factor that two or more #'s have in common	$\text{GCF } 18x^3, 24x^5$ $= 6x^3$
<b>Imaginary Number</b>	$\sqrt{-\#} = i\sqrt{\#}$ $i = \sqrt{-1}$	$\sqrt{-25} = 5i$
<b>Independent Events</b>	when outcome of one event doesn't influence other(s)	tossing coin and rolling cube
<b>Independent Variable</b>	the input ( $x$ ) - controlled variable	hours worked, # of years, gallons of gas
<b>Inequality</b>	compares quantities with $> \geq < \leq$ or $\neq$ (not =)	$2x + 1 > 5, y \neq 3$ $x \geq 4$ $1 \leq x \leq 5$
<u>Integers and Variables</u>	$\{-\dots, -3, -2, -1, 0, 1, 2, 3, \dots\}$	$-15, 24,000, \frac{18}{2}$
<b>Interquartile Range</b>	Middle 50% of data $Q_3 - Q_1$	$Q_3 = 10$ $10 - 2 = 8$ $Q_1 = 2$ $IQR = 8$
<b>Irrational Number</b>	CAN'T be written as fraction non-terminating, non-repeating	
<b>Least (Lowest) Common Multiple (LCM)</b>	smallest common multiple of 2 or more #'s	$\text{lcm}(8, 10) = 40$ $\text{lcm}(2, 4) = 4$
<b>Like Terms</b>	same variables and powers/roots. can be (+/-)	$3x + 2x = 5x$ $4y^2 - 2y^2 = 2y^2$
<b>Line Graph</b>	represents relationship between two variables	continuous (time) 

<b>Line (or Curve) of Best Fit (for Scatter Plot)</b>	estimates the relationship and direction of data for ScatterPlot	
<b>Linear Combination</b>	multiple linear equations strategy to eliminate variable	
<b>Linear Equation/Function non-vertical</b>	equation of a straight line $y = mx + b$	$y = 3x - 4$ $2x - 5y = 1$
<b>Linear Inequality</b>	uses $< \leq > \geq \neq$ in form $y = mx + b$	$y > -4x + 6$ $8x - 5y \leq 4$
<b>Logarithm</b>	the exponent required to produce a given #	$2^5 = 32$ $\log_2 32 = ?$ $\log_2 32 = 5$
<b>Logarithmic Equation</b>	equation w/ log of a variable or #.	
<b>Mapping</b>	matching domain and range (ordered pairs)	
<b>Maximum/Minimum Value (of a Graph)</b>	highest or lowest point on a graph	
<b>Measure of Central Tendency</b>	ways to measure middle of data: mean, median, mode	
<b>Mean</b>	Average $\rightarrow$ add all up and divide by # of items	$75, 85, 90 = \frac{75+85+90}{3} =$
<b>Median</b>	Middle value $\rightarrow$ order from least $\rightarrow$ greatest... centermost term	$90, 92, 93, 94, 95$ ↑ median
<b>Mode</b>	occurs the most $\rightarrow$ can have none or 2+ (multiple)	$75, 80, 80, 90$ mode = 80
<b>Measure of Dispersion</b>	measures spread of data ex: range and IQR (middle 50%)	$90, 92, 95, 100$ $100 - 90 = \text{range of } 10$
<b>Monomial</b>	polynomial with only ONE term, no (+/-)	#, variable, or product $10, x^3 y^3, \frac{4}{3}\pi r^2$
<b>Multiplicative Inverse</b>	reciprocal. # and its mult. inverse = 1	$\frac{1}{4} \left(\frac{4}{1}\right) = 1$ $(-\frac{3}{4}) \left(-\frac{4}{3}\right) = 1$

Mutually Exclusive Events	events that CAN'T occur at same time, no outcomes in common	
Natural Logarithm	base e $(\ln x) = y$ $e^y = x$	
Natural Number	counting # → NO zero $\{1, 2, 3, 4, \dots\}$	"positive integer" 1, 24, 10,000
Negative Exponent	reciprocal must be taken $5^{-2} a^{-x} = \frac{1}{a^x}$	$5^{-2} = \frac{1}{5^2}$
Number Line	represents all real #'s 	
Odds	ratio of outcomes	red hat to green hat $\frac{3}{5} \quad 3 \text{ to } 5 \quad 3:5$
Order of Operations	when evaluating expressions or splitting up PEMDAS Subtract	$3(2+2)^2 \div 4 - 5$ $3(16) \div 4 - 5$ $48 \div 4 - 5$ $12 - 5 = 7$
Ordered Pair	point on coordinate plane solution to equation - 2 variables	$(x, y)$ $(2, 3)$ 
Origin	center point of coordinate plane $(0, 0)$	$x$ axis $y$ axis 
Outlier	extreme value → much higher or lower than most data	10, 83, 85, 91, 92 outlier
Pattern (or Sequence)	set of #'s arranged in order or sequence	arithmetic sequence geometric sequence
Perfect Square	Square root is whole #, (comes out perfect)	$\sqrt{25} = 5 \quad \sqrt{4} = 2$
Permutation	order matters in this combination	$XYZ = XY, XZ, YZ$ $\{2\text{ letter combos}\}$ $YX, ZX, ZY$ $\{3\text{ permutations}\}$
Point-Slope Form (of a Linear Equation)	equation of line, $(x, y)$ , $m = ?$ $y - y_1 = m(x - x_1)$	you need a point and slope $m = 2$ $(1, 3)$ $y - 3 = 2(x - 1)$ $y - 3 = 2x - 2$ $y = 2x + 1$
Polynomial	algebraic expression with two or more terms unlike	binomial $x+2$ trinomial $x^2+3x+2$

<b>Polynomial Function</b>	has equals sign and multi-term expression	$y = 3x^2 + 2x + 1$
<b>Positive Exponent</b>	how many times a base number is multiplied by itself	$2^3 = 2 \cdot 2 \cdot 2$
<b>Power of a Power</b>	Multiply the exponents $(a^m)^n = a^{m \cdot n}$	$(2^3)^4 = 2^{12} = 4,096$
<b>Powers of Products</b>	add exponents $a^m \cdot a^n = a^{m+n}$	$2^3 \cdot 2^4$ $(2^3)(2^4) = 2^7 = 128$
<b>Prime Number</b>	only two factors, one and itself	$3 \rightarrow 1, 3$
<b>Probability</b>	0 to 1 or 0% to 100% how likely something is	$0 \rightarrow$ very unlikely (impossible) $1 \rightarrow$ certain
<b>Quadrants</b>	the four regions of the coordinate plane	
<b>Quadratic Equation</b>	can be written in form $ax^2 + bx + c = 0$ highest power = 2	parabola 
<b>Quadratic Formula</b>	Finds solutions to quadratic equations $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$	$ax^2 + bx + c = 2x^2 + 3x + 1$ $x = \frac{-3 \pm \sqrt{2^2 - 4(2)(1)}}{2(2)}$
<b>Quartile</b>	evenly divides data set into 4 parts	
<b>Radical Expression</b>	expression containing a radical symbol $\sqrt{a}$	$\sqrt[3]{27} = 3$ $\sqrt{49} = 7$
<b>Range (of a Relation or Function)</b>	Set of all possible values for the output (dependent variable)	$(1, 2)(3, 4)(2, 1)$ range = {1, 2, 4}
<b>Range (of Data)</b>	difference between highest and lowest data piece	<u>15, 20, 30, 40, 60</u> <u>60 - 15 = 45</u> range
<b>Rate</b>	ratio that compares two different units	<u>16.8 miles</u> <u>112.5 calories</u> <u>1 hour</u> <u>3 cups</u>
<b>Rate of Change</b>	amount of change over time (slope)	<u>3.2 cm</u> <u>yr</u>

<b>Rate of Interest</b>	% that \$ accrues interest (often compounded periodically)	4.5% per yr
<b>Ratio</b>	comparison expressed by division, fraction	$\frac{2}{3}$ $2:3$ $2 \div 3$
<b>Rational Expression</b>	$\frac{\text{polynomial}}{\text{polynomial}}$	$\frac{(2x^2 - x)}{(x-1)}$ $\frac{(x^2 + 2)}{(x^2 + 1)}$
<b>Rational Number</b>	can be written as fraction. Repeating, terminating	$3.\overline{12}$ , $\frac{4}{5}$ , $-5$ , $.12\overline{12}$
<b>Real Number</b>	All rational & Irrational. No Complex (imaginary)	all #'s
<b>Relation</b>	set of pairs of values neither must be unique/function	$(1,2)(2,3)(3,2)$
<b>Repeating Decimal</b>	Rational #'s endlessly repeats	$.3\overline{3}$ $.72\overline{72}$
<b>Rise</b>	vertical change ↑ between points ↓	$(x_1, y_1)$ $(x_2, y_2)$ $y_2 - y_1$
<b>Run</b>	horizontal change ←→ between points	$(x_1, y_1)$ $(x_2, y_2)$ $x_2 - x_1$
<b>Scatter Plot</b>	dots graph that shows relationship between data	
<b>Simple Event</b>	consists of single outcome	rolling a number cube
<b>Simplest Form</b>	when ALL like terms are combined/reduced	$\frac{4}{8} = \boxed{\frac{1}{2}}$ or $2x+3x = \boxed{5x}$
<b>Simplify</b>	to write in <u>Simplest form</u>	$\frac{4}{12} = \boxed{\frac{1}{3}}$ or $3(2x+3x) = \boxed{3(5x)}$
<b>Slope of a Line</b>	rate of change = $\frac{\text{rise}}{\text{run}}$ steepness	$\frac{y_2 - y_1}{x_2 - x_1}$ $(3,1)(2,2)$ $\frac{2-1}{2-3} = \frac{1}{-1} = -1$
<b>slope-Intercept Form</b>	$y = mx + b$ ← y-int. ↑ slope (where it crosses y axis)	$y = 3x + 4$ $m = \frac{3}{1}$ $b = 4$

<b>Square Root</b>	one of two equal factors $\sqrt{\text{what # times itself}}$	$\sqrt{16} = 4$
<b>Standard Form of a Linear Equation</b>	$Ax+By=C$ equation of Line	$3x-2y=4$
<b>Stem-and-Leaf Plot</b>	stems   leaf shows # distribution (ordered)	$  \begin{array}{c ccc}  3 & 4 & 6 & 8 \\  4 & 0 & & \\  5 & 0 & 1 & \\  \end{array}  $ Key: $3 6 = 36$
<b>Substitution</b>	putting a value in for a variable or term	$  \begin{aligned}  & \text{when } 2x-5= \\  & 2x=4 \quad 2(4)-5=\boxed{3}  \end{aligned}  $
<b>System of Linear Equations</b>	Two or more linear equations with same variable.	$  \begin{aligned}  3x+2y &= 7 \\  x+y &= 9  \end{aligned}  $
<b>System of Linear Inequalities</b>	TWO or more linear inequalities with same variables	$  \begin{aligned}  x+2y &< 7 \\  -x-3y &\geq -3  \end{aligned}  $
<b>Term</b>	part of algebraic expression	$  \begin{aligned}  & \text{separated by } (+/-) \\  3x^2-4y & \quad 4+6  \end{aligned}  $
<b>Terminating Decimal</b>	decimal that stops. have finite digits	$3.\overline{14}$ or $.2\overline{3}$
<b>Trinomial</b>	Polynomial w/ THREE unlike terms	$x^2-2x-15$
<b>Unit Rate</b>	rate in which the ratio is always to "1"	$  \begin{aligned}  & 60 \text{ words/minute} \\  & \$4 \text{ per pound}  \end{aligned}  $
<b>Variable</b>	letter that represents unknown value	$x, y, z$ opposite of constant
<b>Whole Number</b>	$\{0, 1, 2, 3, \dots\}$	0, 100, 3
<b>x-Axis and x-Intercept(s)</b>	 <p>horizontal hits the x-axis</p>	 <p>x-int is (1, 0)</p>
<b>y-Axis and y-Intercept(s)</b>	 <p>vertical hits y-axis</p>	 <p>y-int (0, 1)</p>