

Unit 1: Evaluating & Simplifying Expressions**What is the order of operation?**

1) $8\overline{)3409}$	2) $4 + (-7) - (-1)$	3) $3(-1)(-2)(-3)$	4) $-2 - 2 =$
5) $(14 \div 2) + (3 \cdot 3)$	6) $12 - 2^3 + 4 \cdot 2$	7) Evaluate for $x = 2$ $-x^2$	8) Evaluate $x = -2$ x^2
9) Evaluate for $x = -3$ $2x^2 - x$	10) Simplify $1 + 2(x + 1) - 4$	11) Simplify $4x + x - (3x - 2)$	12) Evaluate for $a = 3, b = 2, c = -4$ $b^2 - 4ac$

13) $4 + 3^3 - 2 \cdot 3$

- a) 7
- b) 25
- c) 33
- d) 87

15) Evaluate for $y = -2$ in $-y^2$

- a) 2
- b) -2
- c) 4
- d) -4

14) Simplify: $1 - 4(x + 3) - x$

- a) $-5x - 11$
- b) $-4x - 9$
- c) $-5x + 4$
- d) $-4x + 3$

16) Which of the following is an inequality for
"Three more than a number is less than seven"?

- a) $3x - 7 = x$
- b) $x + 3 < 7$
- c) $x + 3 = x - 7$
- d) $3x < 7$

Unit 2 + 3: One Variable Equations, Absolute Values, & Inequalities

~Absolute values always have _____ answers.

~You must get absolute values _____ before splitting into two different equations.

~When solving equations with fractions, eliminate the denominator by multiplying all terms by the _____.

~When dividing or multiplying by a negative number in an inequality, you must _____ the sign.

17) $-4x - 5x = 34$	18) $5 - 2(y + 1) = 21$	19) $9m - 2(2m + 6) = 28$	20) Four more than three times a number is 13. What is the number?
21) $\frac{2}{3}x + \frac{1}{2}x = \frac{5}{6} + 2x$	22) $3 b + 4 = 12$	23) $2 x + 1 = 15$	24) $\frac{3}{4}x + 1 = \frac{3}{8} - 2x$
25) $-4x + 1 > 25$	26) $3x < \frac{-1}{6}$	27) $-n \geq -2$	28) $-3x + 5 \leq -8x - 7$

Important Formulas

$m = \frac{y_2 - y_1}{x_2 - x_1}$	$y - y_1 = m(x - x_1)$	$y = mx + b$	$r \bullet t = d$
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Unit 4: Investigating Lines (slope; y- intercept)

What is slope?

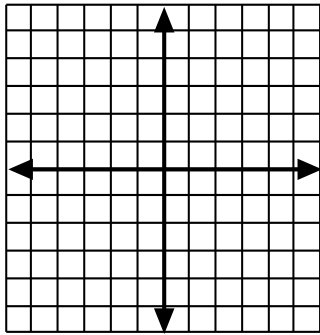
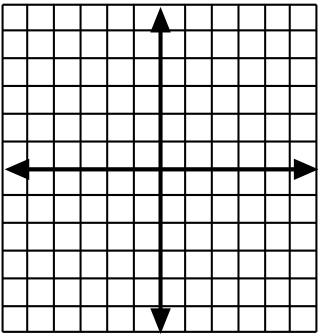
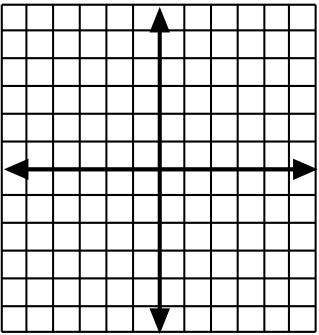
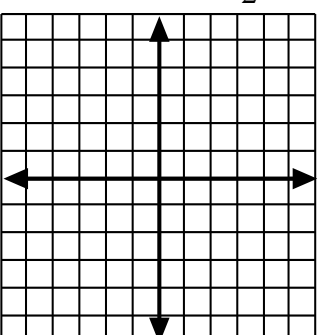
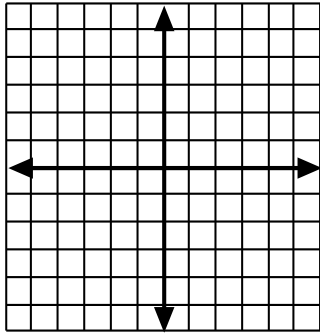
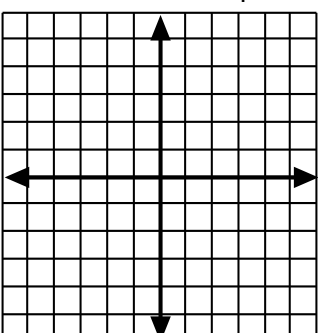
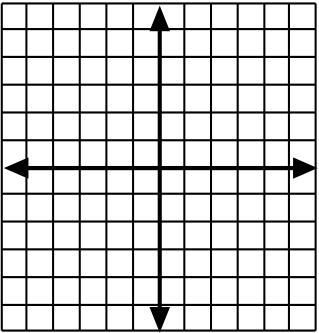
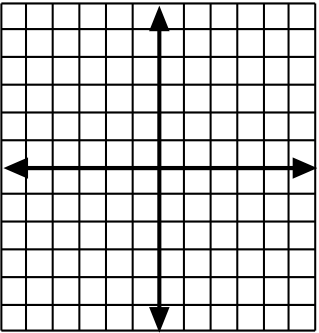
What are x and y intercepts?

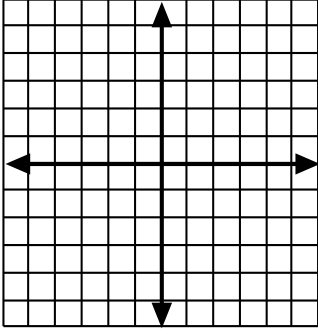
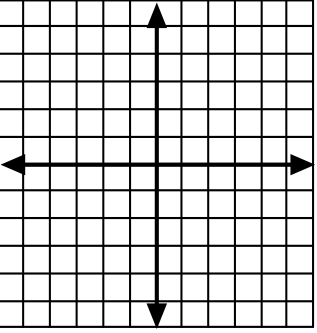
When the line is in what form can we identify the slope and y intercept?

To write the equation of a line you need a _____ and a _____ or two _____.

29) Find the slope of the line containing the points $(-3, 0)$ and $(6, 3)$.	30) Find the slope of the line containing the points $(-5, 2)$ and $(-5, 6)$.	31) Find the slope of the line containing the points $(3, 2)$ and $(7, 2)$.	32) Identify the slope and y intercept: $y = x$
33) Identify the slope and y intercept: $y < \frac{x}{3} + 4$	34) Identify the slope and y intercept: $y = 2$	35) Identify the slope and y intercept: $x = -1$	36) Identify the slope and y intercept: $2x + y = 3$
37) Identify the slope and y intercept: $x - 2y \leq 14$	38) Identify the slope and y intercept: $3x + 2y = 6$	39) Identify the slope and y intercept: $y = 9$	40) Identify the slope and y intercept: $x = 3$

Unit 4, 5, 6: Graphing Equations of Lines and Inequalities; Point Test

41) Graph $y = 3x$ 	42) Graph $y = -3$ 	43) Graph $x = 4$ 	44) Graph $y = \frac{-x}{2} + 3$ 
45) Graph $y < -2x$ 	46) Graph $y \geq \frac{3}{4}x - 1$ 	47) Graph $2x + 4y > 8$ 	48) Graph $3x - y \geq 2$ 

<p>49) Find the solution $y = x + 2$ $y = -2x + 4$</p> 	<p>50) Find the solution $y > -2x + 4$ $y \leq 2x - 1$</p> 	<p>51) Is $(2, -2)$ a solution to the equation $y + 2x = 2$?</p>	<p>52) Is $(-3, -5)$ a solution of the inequality $-x - 2y < 18$?</p>
<p>53) Write the equation of the line with a slope of 2 and a y intercept of -3.</p>	<p>54) Write the equation of the line with a slope of -2 through $(1, 0)$.</p>	<p>55) Write the equation of the line with a slope of $\frac{1}{2}$ through $(-5, -6)$.</p>	<p>56) Write the equation of the line through the points $(4, 5)$ and $(3, 6)$</p>

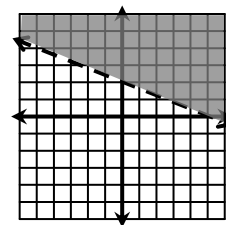
Unit 6: Inequalities

57) Which of the following is a solution of $y > 3x + 5$?

- a) $(3, 14)$
- b) $(3, 15)$
- c) $(2, 9)$
- d) $(2, 11)$

58) Identify this linear inequality:

- a) $y > -\frac{2}{5}x + 2$
- b) $y \geq -\frac{2}{5}x + 2$
- c) $y < -\frac{2}{5}x + 2$
- d) $y \leq -\frac{2}{5}x + 2$



Unit 5: Parallel & Perpendicular Lines

What is special about parallel lines?

What is special about perpendicular lines?

<p>59) Determine whether the graphs of the equations are parallel, perpendicular, or neither.</p> $y = -3x + 4$ $6x + 2y = -10$	<p>60) Determine whether the graphs of the equations are parallel, perpendicular, or neither.</p> $y = 3x + 1$ $6y + 2x = 6$	<p>61) Determine whether the graphs of the equations are parallel, perpendicular, or neither.</p> $y = 2x + 4$ $2y - x = 2$
<p>62) Write the equation of the line through the point (2, 1) <u>perpendicular</u> to $y = 2x + 7$.</p>	<p>63) Write the equation of the line through the point (0, -4) <u>parallel</u> to $2x + y = 4$</p>	<p>64) Write the equation of any line <u>parallel</u> to $y = \frac{1}{4}x - 3$.</p>

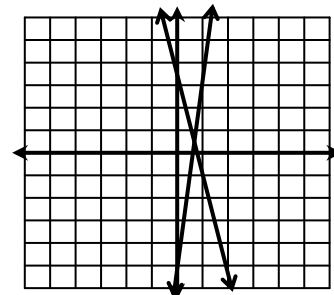
Unit 5: System of Equations

65) Which pair of linear equations represents parallel lines?

- a) $y = \frac{5}{2}x - 8$ b) $y = \frac{2}{7}x + 3$ c) $y = \frac{3}{4}x + 1$ d) $y = -\frac{3}{5}x + 1$
- a) $y = -\frac{2}{5}x + 2$ b) $y = -\frac{2}{7}x + 1$ c) $y = \frac{3}{4}x + 7$ d) $y = -\frac{5}{3}x + 2$

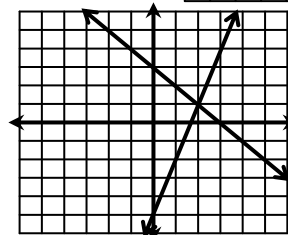
66) How many solutions does this system have?

- a) 0
b) 1
c) 2
d) infinite



67) What is the solution to this system?

- a) (0, 3)
b) (2, 1)
c) (1, 2)
d) (4, 0)



68) Which of the following is a solution to the system of equations:

$$x = 2y + 8$$

$$3x + y = 1$$

- a) (2, 3)
b) (3, 2)
c) (-3, 2)
d) (2, -3)

Unit 5: Systems of Equations

What are the three methods for solving systems of equations and how do we use each?

1.

2.

3.

69) Solve for x and y: $x + y = 4$ $y = 2x + 1$	70) Solve for x and y: $y = 2x - 5$ $3y - x = 5$	71) Solve for x and y: $x + y = -2$ $x = y + 6$
72) Solve for x and y: $x + y = 5$ $2x - y = 4$	73) Solve for x and y: $3x - 3y = 6$ $3x + 3y = 0$	74) Solve for x and y: $x + y = 8$ $-x + 2y = 7$
75) Solve for x and y: $3x + 6y = -6$ $5x - 2y = 14$	76) Solve for x and y: $x + 3y = 19$ $x - y = -1$	77) Solve for x and y: $x - 3y = -4$ $2x - y = 7$

Unit 5: System of Equations Word Problems

78) A chemist has Solution A that is 10% iodine and Solution B that is 50% iodine. How much of Solution A should the chemist use to get 100 milliliters (ml) of a mixture that is 20% iodine?

- a) solution A: 25 ml
- b) solution A: 75 ml
- c) solution A: 100 ml
- d) solution A: 20 ml

79) You have 25 coins consisting of nickels and dimes that total \$1.50. How many nickels do you have?

- a) 5
- b) 15
- c) 20
- d) 25

80) Two busses leave MT High School at the same time going in opposite directions. One bus travels at 38 miles per hour and the other travels 44 miles per hour. In how many hours will they be 287 miles apart?

- a) 0.29 hours
- b) 3.5 hours
- c) 2.5 hours
- d) 5 hours

- a) $12\frac{1}{4}$ hours
- b) 16 hours
- c) $8\frac{1}{4}$ hours
- d) $11\frac{1}{4}$ hours

81) A train leaves a station traveling 44 mi/hr. Three hours later, a second train leaves the same station on a parallel track heading in the same direction and traveling 60 mi/hr. For how many hours has the **first** train been traveling when the second train catches up? (Remember $D=R*T$)

82) It takes Company A 10 hours to tile a roof. It takes Company B 15 hours to tile a roof. If they work together, how long will it take them to tile a roof?

- a) 6 hours
- b) 8 hours
- c) 12.5 hours
- d) 25 hours

Unit 7: Rules of Exponents

Simplify

83) x^{-2}

84) $2x^{-1}$

85) $x^6 \cdot x^5$

86) $x^8 \cdot x^{-2}$

87) $(3x^2y^2)^3$

88) $(6xy^6)^2$

89) $\frac{4x^8y^7}{14x^6y^2}$

90) $\frac{8x^6y^2}{14x^2y^6}$

Unit 7: Polynomials #1

How do you subtract or add two polynomials?

How do you multiply binomials?

Simplify

91) $(2x^3 - 5x^2 + 4x - 4y) + (4x^3 + 3x^2 - 2x + 3y)$ 92) $(2x^4 + 3x^3 - x^2 - 3) - (5x^4 - x^3 + x - 2)$

93) $(x+3)(2x-3)$

94) $(5x-6)(2x+1)$

95) $(3x+2)(3x-2)$

96) $(3x^2 - 5x)(-2x - 4) - (8x^3 + 6x^2 - 5x + 3)$

97) $(5x^2 - 2x + 6)(4x - 3)$

Unit 7: Polynomials #2

Simplify

98) $(x-3)^2$

99) $(5x-4)^2$

100) $(-x+5)^2$

101) $(x+4)^2 =$

a) $x^2 + 4$

b) $x^2 + 4x$

c) $x^2 + 16$

d) $x^2 + 8x + 16$

How do you find Perimeter?

How do you find Area?

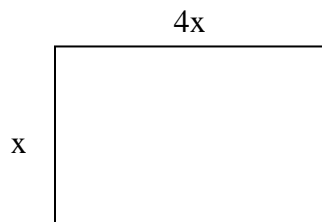
102) Find the perimeter:

a) $8x$

b) $8x^4$

c) $10x$

d) $10x^4$



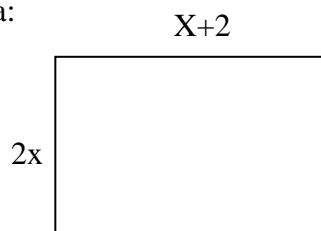
103) Find the area:

a) $2x^2 + 4$

b) $2x^2 + 4x$

c) $2x^2 + 2x$

d) $2x^2 + 2$



104) The length of a rectangular garden is $x+4$ and the width is $x+6$. Find the area of the garden

105) The side of a square garden is $x-3$. Find the area of the garden.

Unit 7: Factoring

What types of factoring do you know and when do you use each?

1.	2.	3.	4.

Factor

106) $x^2 - 12x + 35$	107) $x^2 - 6x - 12$	108) $6x^5 - 9x^2 + 24x^3$
109) $x^2 - 100$	110) $4x^2 - 9$	111) $5x^2 - 10x - 175$

112) $4x^2 + 13x + 3$	113) $3x^2 - x - 2$	114) $6x^2 - 18x - x + 3$
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Unit 8: Functions

What is the difference between a function and a relation?

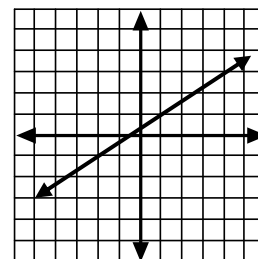
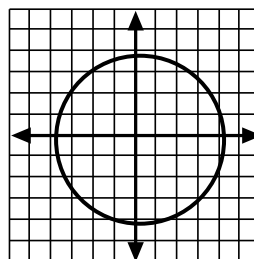
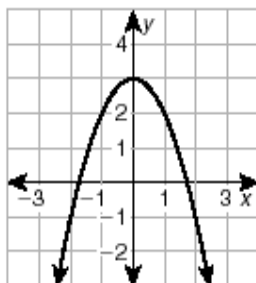
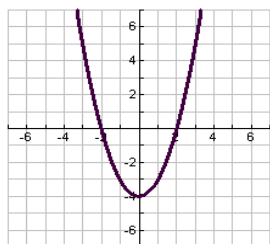
What is domain and range?

How do you use the vertical line test when looking at a graph to see if it is a function?

115) Consider the following function: $f(x) = \{(3,9), (4,2), (5,1), (6,8)\}$. Decide if $f(x)$ is a function or NOT. Explain why or why not.

116) Consider the following function: $g(x) = \{(1,-1), (2,3), (4,4), (5,-1), (6,2), (5, 6)\}$. Decide if $g(x)$ is a function or NOT. Explain why or why not. Find domain and range.

117) Determine whether each graph is a function or relation. Explain why or why not. Then find the domain and range.



Unit 8: Function Notation

What is function notation? What does the f and the x mean in $f(x)$?

118) Evaluate.

$f(x) = -x^2 - 2x$ to find:

a. $f(2)$

b. $f(-2)$

c. $f(-1)$

d. $f(1)$

e. $f(3) - f(1)$

Unit 9: Quadratics

How does factoring and using zero products apply when you solve quadratics?

How would you solve for x when you have $(x+1)^2 = 8$?

Which number would complete the square for the quadratic equation, $x^2 - 12x + \underline{\hspace{1cm}} = -18 + \underline{\hspace{1cm}}$?

How does using the discriminant help you when solving quadratic equations?

Solve.

119) $8x^2 + 4x = 0$	120) $x^2 - 25 = 0$	121) $2x^2 - 8 = 0$
122) $x^2 - 3x - 10 = 0$	123) $0 = x^2 + 10x + 2$	124) $2x^2 - 13x - 45 = 0$

Unit 9: Graphing Quadratics

What are the steps to graphing a quadratic? What do you have to find first, how do you find the next item and so on.

1.

2.

3.

4.

5.

6.

Graph

125) $y = x^2 + 6x + 5$

Roots:

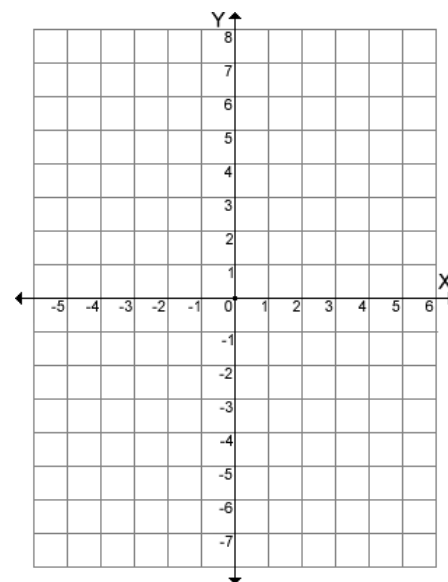
Vertex:

2 more points:

Domain:

Range:

Axis of Symmetry:



126) $y = -x^2 + 4$

Roots:

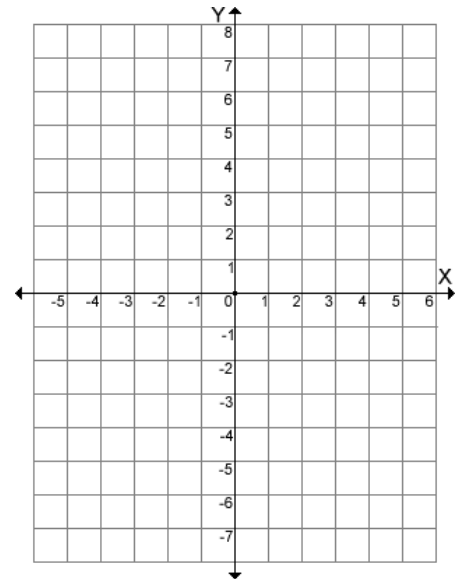
Vertex:

2 more points:

Domain:

Range:

Axis of Symmetry:



127) $y = -3x^2 + 6x$

Roots:

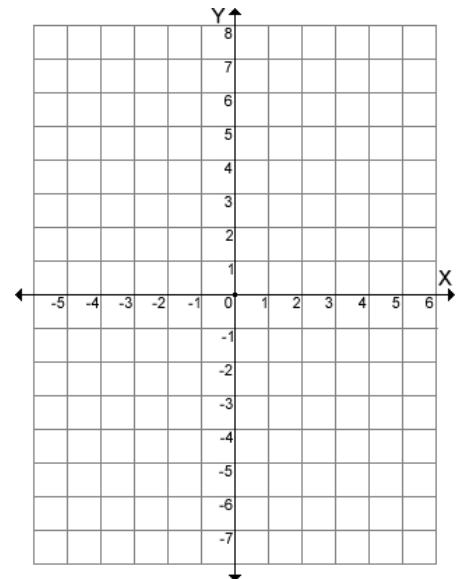
Vertex:

2 more points:

Domain:

Range:

Axis of Symmetry:



Unit 9: Quadratic Word Problems

128) Use the model, $h = -16t^2 + h_0$. A ball is dropped from 195 feet from the ground. How far from the ground will the ball be after 3 seconds?

- a) 51 feet
- b) 99 feet
- c) 3 feet
- d) 195 feet

129) Use the model, $h = -16t^2 + h_0$. A ball is dropped from 64 feet from the ground. When will it hit the ground?

- a) 0 seconds
- b) 2 seconds
- c) 4 seconds
- d) 64 seconds

Unit 10: Rational Expressions and Equations

~When multiplying or simplifying fractions, you always _____ and _____ .

~When dividing fractions, you must do what?

~When adding or subtracting fractions you must get a _____ denominator.

~When Solving equations with fractions, simplify both sides to just one fraction, then _____.

130) $\frac{7}{8} = \frac{m}{4}$	131) I walk 3 minutes for every 8 minutes I run. How much of my time will be spent walking in 24 minutes?	132) Multiply $\frac{a-5}{5a-10} \cdot \frac{a+1}{a^2-1}$
133) Divide $\frac{x+1}{x^2-1} \div \frac{x+1}{x^2-2x+1}$	134) Add $\frac{3}{x^2} + \frac{6}{x}$	135) Subtract $\frac{4}{5x} - \frac{1}{x^2}$
136) Solve $\frac{1}{x} = \frac{1}{4-x}$	137) Solve $x + \frac{3}{x} = -4$	138) Simplify $\frac{2x^2+x}{3x^2+2x}$