Lessons 1.1-1.3 Worksheet

Name: Key Date:_____

Directions: the first two of the equations in each line are partially worked out, you are to fill in the blanks and/or work needed in each step, and apply what you have learned and is done to the last problem in that line.

Two Step Equations

1. $-7x + 24 = -11$

$-24 \quad -24$

$\frac{-7x}{-7} = \frac{35}{-7}$

$x = -5$

2. $-12 - 4x = 12$

$+12 \quad +12$

$\frac{-4x}{-4} = \frac{24}{-4}$

$x = -6$

3. $7 - 3x = -8$

$-7 \quad -7$

$\frac{-3x}{-3} = \frac{-15}{-3}$

$x = 5$

Combining Like Terms First, then solve the two step equation

1. $6x + 4x - 15 = 25$

$10x - 15 = 25$

$+15 \quad +15$

$\frac{10x}{10} = \frac{40}{10}$

$x = 4$

2. $-15 = 3 - 6x + 15x$

$-15 = 3 + 9x$

$-3 \quad -3$

$\frac{-18}{9} = \frac{9x}{9}$

$-2 = x$

3. $23 = 4x - 7 - 6x$

$23 = -2x - 7$

$+7 \quad +7$

$\frac{30}{-2} = \frac{-2x}{-2}$

$-15 = x$

Combine like terms first, then Move Variable so it is only on one side, last solve the two step equation

1. $7x - 2x - 12 = 7x + 10$

$5x - 12 = 7x + 10$

$-5x \quad -5x$

$-12 = 2x + 10$

$-10 \quad -10$

$\frac{-22}{2} = \frac{2x}{2}$

$-11 = x$

2. $21 - 3x = -4x + 9 - 5x$

$21 - 3x = -9x + 9$

$+9x \quad +9x$

$21 + 6x = 9$

$-21 \quad -21$

$\frac{6x}{6} = \frac{-12}{6}$

$x = -2$

3. $13x - 7x + 33 = -5x + 11$

$6x + 33 = -5x + 11$

$+5x \quad +5x$

$11x + 33 = 11$

$-33 \quad -33$

$\frac{11x}{11} = \frac{-22}{11}$

$x = -2$

Lessons 1.3 and 2.1-2.4 Worksheet Name: Key Date:

Distribute First, combine like terms second, then move variable so it is only on one side, last solve the two step equations

1. $2x + 3(x-4) = 7(x+4)$

$2x + 3x - 12 = 7x + 28$

$5x - 12 = 7x + 28$

$-5x \quad -5x$

$-12 = 2x + 28$

$-28 \quad -28$

$\frac{-40}{2} = \frac{2x}{2}$

$-20 = x$

2. $16 - 2(x-9) = -12(x+3) + 3x$

$16 - 2x + 18 = -12x - 36 + 3x$

$34 - 2x = -9x - 36$

$+9x \quad +9x$

$34 + 7x = -36$

$-34 \quad -34$

$\frac{7x}{7} = \frac{-70}{7}$

$x = -10$

3. $11x - 5(x+4) = -2(x-5) + 5x$

$11x - 5x - 20 = -2x + 10 + 5x$

$6x - 20 = 3x + 10$

$-3x \quad -3x$

$3x - 20 = 10$

$+20 \quad +20$

$\frac{3x}{3} = \frac{30}{3}$

$x = 10$

INEQUALITIES. Solve and Graph. DON'T FORGET TO FLIP THE SIGN WHEN •÷ BY A (–)

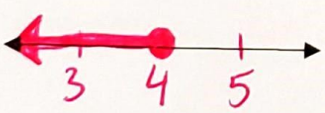
1. $3x - 4 \leq 8$

$+4 \quad +4$

$\frac{3x}{3} \leq \frac{12}{3}$

$x \leq 4$

(does not flip-divided by a positive)



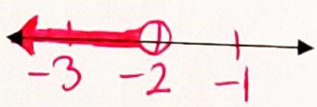
2. $4 - 3x > 10$

$-4 \quad -4$

$\frac{-3x}{-3} > \frac{6}{-3}$

$x < -2$

(does flip-divided by a negative)

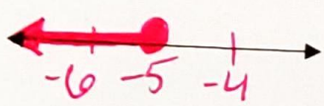


3. $-7x - 16 \geq 19$

$+16 \quad +16$

$\frac{-7x}{-7} \geq \frac{35}{-7}$

$x \leq -5$



4. $20 \leq 6x + 2$

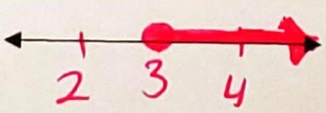
$-2 \quad -2$

$\frac{18}{6} \leq \frac{6x}{6}$

$3 \leq x$

(does not flip-divided by a positive)

Rewrite: $x \geq 3$



5. $27 > 7 - 4x$

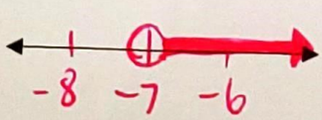
Rewrite: $7 - 4x < 35$

$-7 \quad -7$

$\frac{-4x}{-4} < \frac{28}{-4}$

(does flip-divided by a negative)

$x > -7$



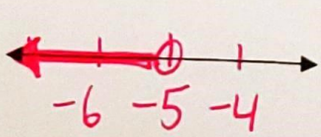
6. $16 < -6x - 14$

$+14 \quad +14$

$\frac{30}{-6} < \frac{-6x}{-6}$

$-5 > x$

$x < -5$



Lessons 1.1-1.3 Worksheet

Name: Key Date: _____

Combining Like Terms First, then solve the two step inequality

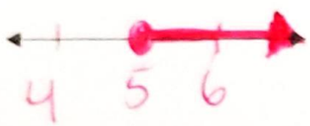
1. $8x + 2x - 5 \geq 25$

$6x - 5 \geq 25$

$+5 \quad +5$

$\frac{6x}{6} \geq \frac{30}{6}$

$x \geq 5$



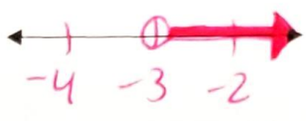
2. $-25 < 2 - 4x + 13x$

$-25 < 2 + 9x$

$-2 \quad -2$

$\frac{-27}{9} < \frac{9x}{9}$ $\quad x > -3$

$-3 < x$



Distribute First, combine like terms second, then move variable so it is only on one side, last solve the two step inequality

1. $4x + 2(3x - 5) \leq 7(x + 4) - 2$

$4x + 6x - 10 \leq 7x + 28 - 2$

$10x - 10 \leq 7x + 26$

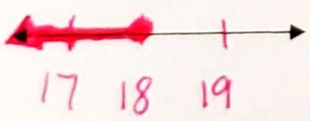
$-7x \quad -7x$

$3x - 10 \leq 26$

$+10 \quad +10$

$\frac{3x}{3} \leq \frac{36}{3}$

$x \leq 18$



2. $22 - 5(x - 6) > -4(x + 9) - 5x$

$22 - 5x + 30 > -4x - 36 - 5x$

$52 - 5x > -9x - 36$

$+5x \quad +5x$

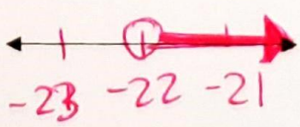
$52 > -4x - 36$

$+36 \quad +36$

$\frac{88}{-4} > \frac{-4x}{-4}$

$-22 < x$

Rewrite: $x > -22$



3. $13x - 5(x + 4) > -2(x - 5) + 8x$

$13x - 5x - 20 > -2x + 10 + 8x$

$8x - 20 > 6x + 10$

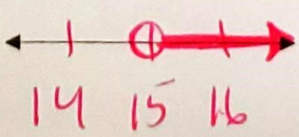
$-6x \quad -6x$

$2x - 20 > 10$

$+20 \quad +20$

$\frac{2x}{2} > \frac{30}{2}$

$x > 15$



Graphing Lines and Parabolas Review

Name: Key

Finding Slope from Points

$m = \frac{y_2 - y_1}{x_2 - x_1}$

1. label the first coordinates x_1 and y_1
2. label the second coordinates x_2 and y_2
3. Substitute and simplify

(13,-5), (-9,6)
1st 2nd
$x_1\ y_1$ $x_2\ y_2$

$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{6 - -5}{-9 - 13}$

$m = \frac{11}{-22} = -\frac{1}{2}$

$m = -\frac{1}{2} = \frac{-1}{2} = \frac{1}{-2} = -0.5$

(5,-4), (7,-4)
$x_1\ y_1$ $x_2\ y_2$

$m = \frac{-4 - -4}{7 - 5} = \frac{0}{2} = 0$

slope is 0

(2,-3), (2,8)
$x_1\ y_1$ $x_2\ y_2$

$m = \frac{-3 - 8}{2 - 2} = \frac{-11}{0}$

slope is undefined

(-1,-3), (-2,-8)
$x_1\ y_1$ $x_2\ y_2$

$m = \frac{-3 - -8}{-1 - -2} = \frac{5}{1} = 5$

$m = 5 = \frac{5}{1} = \frac{-5}{-1}$

Examples: Write the slope and y -intercept of each line.

1) $y = \frac{2}{3}x - 5$

$b = -5 \quad (0, -5)$

$m = \frac{2}{3} = \frac{-2}{-3} = 0.\overline{6}$

2) $y = -3/5x - 3$

$b = -3 \quad (0, -3)$

$m = -\frac{3}{5} = \frac{-3}{5} = \frac{3}{-5} = -0.6$

3) $y = 4x + 3$

$b = 3 \quad (0, 3)$

$m = 4 = \frac{4}{1} = \frac{-4}{-1}$

4) $y = 7/6x - 8$

$b = -8 \quad (0, -8)$

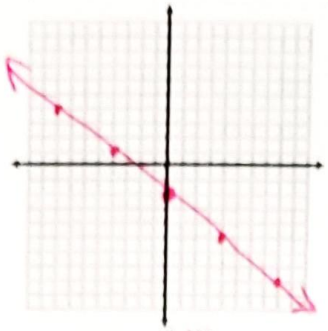
$m = \frac{7}{6} = \frac{-7}{-6} = 1.$

Graphing Lines and Parabolas Review **Name:**_____

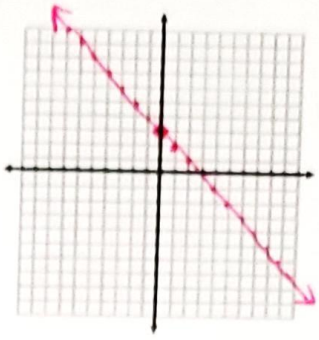
Graph each equation using slope and y intercept.

$M = \frac{rise}{run}$

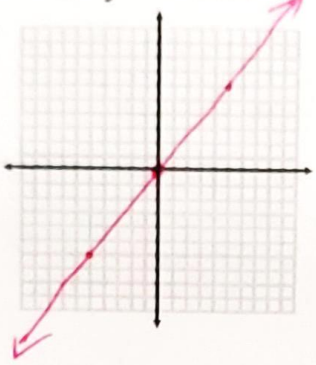
1) $y = -3/4\,x - 2$ (b)



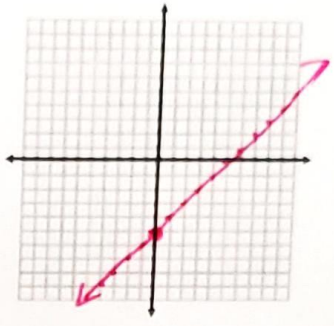
2) $y = -x + 3$



3) $y = 6/5x$

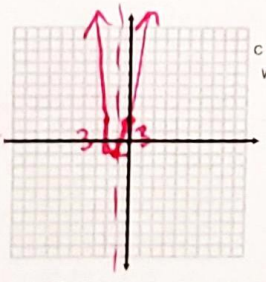


4) $y = x - 5$



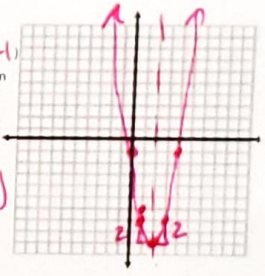
Graph each equation and label the y-int, AOS, and vertex

1) $y = 3x^2 + 6x + 2$



What is the value of c?
Plot the y-intercept
$c = 2$ $(0, 2)$ $c = -1$ $(0, -1)$
Write and draw the Axis of Symmetry equation
$x = -b/2a$:
$x = \frac{-6}{2(3)} = \frac{-6}{6} = -1$ $x = \frac{-(-8)}{2(2)} = 2$
Draw the vertex. Plug in the AOS value into the function for x to get the y coordinate
Vertex: $(-1, -1)$ Vertex $(2, -9)$
What is the value of a?
a = from the vertex point a =
go right 1 and up a
go left 1 and up a

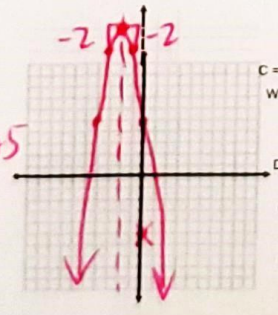
$f(-1) = 3(-1)^2 + 6(-1) + 2$
$= 3 - 6 + 2$
$= -3 + 2$
$= -1$



$f(2) = 2(2)^2 - 8(2) - 1$
$= 8 - 16 - 1$
$= -8 - 1$
$= -9$

2) $y = 2x^2 - 8x - 1$

3) $y = -2x^2 - 8x + 5$



What is the value of c?
Plot the y-intercept
$c = 5$ $(0, 5)$ $c = 0$ $(0, 0)$
Write and draw the Axis of Symmetry equation
$x = -b/2a$:
$x = \frac{-(-8)}{2(-2)} = -2$ $x = \frac{-16}{2(-4)} = 2$
Draw the vertex. Plug in the AOS value into the function for x to get the y coordinate
Vertex $(-2, 13)$ Vertex $(2, 16)$
What is the value of a?
a = from the vertex point a =
go right 1 and up a
go left 1 and up a

$f(-2) = -2(-2)^2 - 8(-2) + 5$
$= -8 + 16 + 5$
$= 8 + 5$
$= 13$

4) ~~y =~~ $y = -4x^2 + 16x$

$f(2) = -4(2)^2 + 16(2)$
$= -16 + 32$
$= 16$

Writing Linear Equations Review

Name: Key Date: _____

Calculate the slope of the line passing through each pair of points using the slope formula. If the slope is undefined, write "undefined."

1. (-6,7) and (-6,-2)

$\frac{7--2}{-6--6} = \frac{9}{0}$

Undefined

2. (4,1) and (-4,1)

$\frac{1-1}{4--4} = \frac{0}{8}$

$m=0$

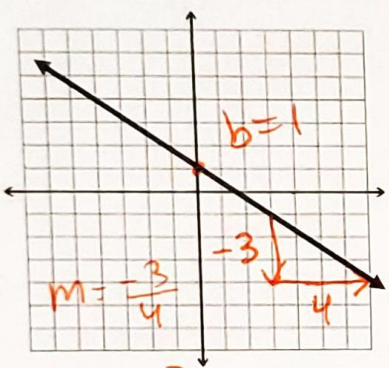
3. (-2,1) and (3,-2)

$\frac{1--2}{-2-3} = \frac{3}{-5}$

$m = \frac{3}{-5}$

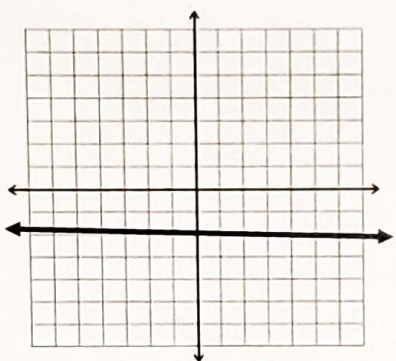
Write the slope-intercept form of an equation for the lines graphed below.

4.



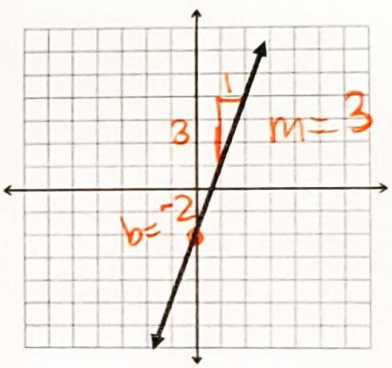
$y = -\frac{3}{4}x + 1$

5.



$y = -2$

6.



$y = 3x - 2$

7. Write a linear equation in slope-intercepet form to model the situation: An Skyzone charges $5.95 per person plus $2.50 for each hour of jumping. Let y be the total amount you pay to jump.

b = 5.95

m = 2.50

1 person has jumping charges

$y = 2.50x + 5.95$

8. Write a linear equation in slope-intercept form to model the situation: You have $3,000 in a bank account, and you set up automatic bill pay for your cellphone bill of $124.98 per month. Let y be how much is left in the account each month.

$y = 3000 - 124.98x$

Writing Linear Equations Review

Name:_____ Date:_____

For question 9 – 13, write the slope-intercept form of the equation for the line given each situation.

9. Passes through (5,4) and (6,-1)

$m = \frac{4--1}{5-6} = \frac{5}{-1} = -5$

$4 = -5(5) + b$

$4 = -25 + b$

$+25 \quad +25$

$29 = b$

$y = -5x + 29$

10. Slope of $\frac{4}{3}$ and passes through (3,0)

$0 = \frac{4}{3}(3) + b$

$0 = 4 + b$

$-4 = b$

$y = \frac{4}{3}x - 4$

11. Passes through (-4,-5) and (6,-1)

$m = \frac{-5--1}{-4-6} = \frac{-4}{-10} = \frac{2}{5}$

$-5 = \frac{2}{5}(-4) + b$

$\frac{-25}{5} = \frac{-8}{5} + b$

$-\frac{17}{5} = b$

$y = \frac{2}{5}x - 3.4$

12. Parallel to the graph of $9x + 3y = 6$ that passes through (5,3)

$9x + 3y = 6$

$-9x \quad -9x$

$\frac{3y}{3} = \frac{-9x + 6}{3}$

$y = -3x + 2$

$m = -3$

$3 = -3(5) + b$

$3 = -15 + b$

$18 = b$

$y = -3x + 18$

13. Perpendicular to the graph of $4x - y = 12$ that passes through (8,2)

$-4x \quad -4x$

$\frac{-y}{-1} = \frac{-4x + 12}{-1}$

$y = -4x - 12$

$m = -4 = \frac{-4}{1}$

$m_{\perp} = \frac{1}{4}$

$2 = \frac{1}{4}(8) + b$

$2 = 2 + b$

$-2 \quad -2$

$0 = b$

$y = \frac{1}{4}x$

14. Perpendicular to the graph of $y = -\frac{2}{3}x + 18$ that passes through (0,2)

$m = \frac{-2}{3}$

$m_{\perp} = \frac{3}{2}$

$2 = \frac{3}{2}(0) + b$

$2 = b$

$y = \frac{3}{2}x + 2$

Factoring and Solving Quadratics Review

Name: Key

You will be factoring or solving all the expressions or equations by factoring. The skills are all mixed, you will need to decide which skills are being applied and which to use.

Examples:

a. Factor out GCF Only $12x^3y^2 - 24x^2y^3 + 16xy^3$ $3\cdot4\cdot x\cdot x\cdot x\cdot y\cdot y - 6\cdot4\cdot x\cdot x\cdot y\cdot y\cdot y + 4\cdot4\cdot x\cdot y\cdot y\cdot y$ **Factored: $4xy^2(3x^2 - 6xy + 4y)$**	b. Factor out GCF and Solve: **$5x^3 - 45x = 0$** $5x(x^2 + 0x - 9) = 0$ [3(-3)= -9 and 3+-3 = 0] **Factored: $5x(x + 3)(x - 3)$** $5x = 0$ $x+3=0$ $x-3=0$ **Solved: $x = 0$ $x = -3$ $x = 3$**
c. Solve using Quadratic Formula: **$-8z^2 + 2z + 16 = 9$** $-8z^2 + 2z + 7 = 0$ $a = -8, b = 2, c = 7$ $z = \frac{-(2) \pm \sqrt{(2)^2 - 4(-8)(7)}}{2(-8)} = \frac{-2 \pm \sqrt{228}}{-16}$ $z = \frac{-2 + 15.099}{-16}$ and $z = \frac{-2 - 15.099}{-16}$ $z = -0.819$ and $z = 1.069$	d. Factor and Solve: **$-p^2 - 10p - 16 = 0$** $-1(p^2 + 10p + 16) = 0$ **Factored: $-1(p + 2)(p + 8) = 0$** [2(8)= 16 and 2+8 = 10] $p + 2=0$ $p + 8=0$ **Solved: $p = -2$ $p = -8$**

1. Factor out GCF Only: $10x^2yz - 22x^3y^2z$

$2x^2yz(5 - 11xy)$

2. Factor Only: $-x^2 + 5x + 24$

$-1(x^2 - 5x - 24)$

$-1(x - 8)(x + 3)$

3. Factor out GCF and Solve: $12b^2 - 8b = 0$

$4b(3b - 2) = 0$

$\frac{4b}{4} = \frac{0}{4}$ $3b - 2 = 0$

$b = 0$ $\frac{3b}{3} = \frac{2}{3}$ $b = \frac{2}{3}$

4. Factor and Solve: $m^2 + 12m - 28 = 0$

$(m + 14)(m - 2) = 0$

$m + 14 = 0$ $m - 2 = 0$

$-14 \quad -14$ $+2 \quad +2$

$m = -14$ $m = 2$

5. Use Quadratic Formula to solve: $5t^2 + 17t - 12 = 0$

$a = 5$ $b = 17$ $c = -12$

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

$x = \frac{-17 \pm \sqrt{(17)^2 - 4(5)(-12)}}{2(5)}$

$x = \frac{-17 \pm \sqrt{529}}{10}$

$x = \frac{-17 + 23}{10}$ $x = \frac{-17 - 23}{10}$

$x = 0, 6$ $x = -4$

6. Solve for x using Square root: $64x^2 - 1 = 0$

$+1 \quad +1$

$\frac{64x^2}{64} = \frac{1}{64}$

$\sqrt{x^2} = \sqrt{\frac{1}{64}}$

$x = \frac{1}{8}$ $x = -\frac{1}{8}$

Set equal to 0 and then Factor or Use Quadratic Formula to solve:

7. $y^2 + 4y = 45$

$-45 \quad -45$

$y^2 + 4y - 45 = 0$

$(y + 9)(y - 5) = 0$

$y + 9 = 0$ $y - 5 = 0$

$-9 \quad -9$ $+5 \quad +5$

$y = -9$ $y = 5$

8. $3p^2 = 13p - 12$

$3p^2 - 13p + 12 = 0$

$a = 3$ $b = -13$ $c = 12$

$x = \frac{-(-13) \pm \sqrt{(-13)^2 - 4(3)(12)}}{2(3)}$

$x = \frac{13 \pm \sqrt{25}}{6}$

$x = \frac{3+5}{6}$ $x = \frac{3-5}{6}$

$x = 1.3$ $x = -.3$

9. $18x = 2x^2 - 72$

$0 = 2x^2 - 18x - 72$

$a = 2$ $b = -18$ $c = -72$

$x = \frac{-(-18) \pm \sqrt{(-18)^2 - 4(2)(-72)}}{2(2)}$

$x = \frac{18 \pm \sqrt{900}}{4}$

$x = \frac{18 + 30}{4}$ $x = \frac{18 - 30}{4}$

$x = 12$ $x = -3$

10. $x^2 - x = -20$

$x^2 - x + 20 = 0$

$(x - 5)(x + 4) = 0$

$x - 5 = 0$ $x + 4 = 0$

$+5 \quad +5$ $-4 \quad -4$

$x = 5$ $x = -4$