Linear Unit Part 1:

Solving Equations

Solving 1 step equations with addition and subtraction	A) $x + 9 = 12$ B) $x - 3 = 11$ C) $-12 = 12 + x$ D) $-15 = -13 + x$ E) $14 + x = -7$ F) $7 = x + 10$

Solving 1 step equations with multiplication and division.	A) $4x = 16$ B) $30 = -5x$ C) $-3x = -60$ D) $\frac{x}{5} = 3$ E) $\frac{x}{-4} = 5$ D) $\frac{3}{4}x = 5$ E) $\frac{-5}{3}x = -2$

Solving 2 step equations Adding or Subtracting First	1. $4x+6=14$ 2. $-p+7=-13$ 3. $9=\frac{r}{-3}+4$ 4. $\frac{x}{4}-5=10$ 5. $5=-6+\frac{x}{2}$ 6. $3x+5=32$

Solving 2 step equations Getting rid of fractions first	1. $9=\frac{x}{2}+4$ 2. $9=\frac{x}{2}+4$ 3. $\frac{x}{-3}-2=5$ 4. $\frac{x}{-3}-2=5$

Multi-Step Equations with distributive property (no negative coefficients) - Do 2 with Distributive Property First - Do 2 with Dividing First	1. $5(3x + 3) = 75$	2. $3(2x + 4) = 30$
	3. $3(5x – 4) = 48$	4. $2(3x – 2) = 26$
Multi-Step Equations with distributive property (negative coefficients)	1. $-5(4x + 4) = 80$	2. $4(-5x + 4) = 76$
	3. $-3(-4x – 4) = 24$	4. $2(-2x – 3) = 24$

Solving equations with the distributive property and fractions	1. $\frac{2}{3}(x-5)=6$ 2. $\frac{5}{4}(x-1)=10$	1. $\frac{2}{3}(x-5)=6$ 2. $\frac{5}{4}(x-1)=10$

Multi-Step Equations with like terms on the same side(no negative coefficients)	1. $-12 + 3x + 2x = 3$ 2. $x - 6 + 2x = 3$ 3. $3x - 2 - x = 4$ 4. $x + 3x - 16 = 4$
Multi-Step Equations with like terms on the same side(negative coefficients)	1. $-1 + x - 3x = 5$ 2. $-x - 9 + 3x = 3$ 3. $-3x - 23 + 2x = 7$ 4. $-x - 3x + 16 = 4$

Multi-Step Equations with distributive property and like terms on the same side(no negative coefficients)	1. $4x + 7(x - 3) = 34$ 2. $2x + 3(2x - 4) = 44$ 3. $3x + 2(x + 2) = 49$ 4. $2x + 7(x - 2) = 31$

Multi-Step Equations with distributive property and like terms on the same side(negative coefficients)	1. $-4x + 5(-x + 4) = 34$ 2. $-2x + 4(-2x – 2) = 44$ 3. $-3x - 2(2x + 3) = 48$ 4. $4x - 7(x – 2) = 31$

Multi-Step Equations with like terms on both sides without distributive property

1. $5x = 3x - 8$

2. $6x = 4x - 12$

3) $7x - 2 = 5x + 10$

4) $-7x + 15 = -3 + 2x$

5) $3x - 21 = -2x + 9$

6) $2x - 9 = -3x + 6$

7) $-23 + 2x = -3x + 7$

8) $-6 + 2x = 3 - x$

1. $2(x - 5) = 3x + 1$

2. $5(x + 3) = 2x - 9$

Multi-Step Equations with like terms on both sides with distributive property	1. $4(x+3)=2(x-6)$ 2. $3(x+2)=4(x-10)$ 3. $-9(x-4)=-(x+20)$

Multi-Step Equations anything goes	1. $4x-3+2x=8x-3-x$ 2. $8y+6-12y=2y+9-3y$

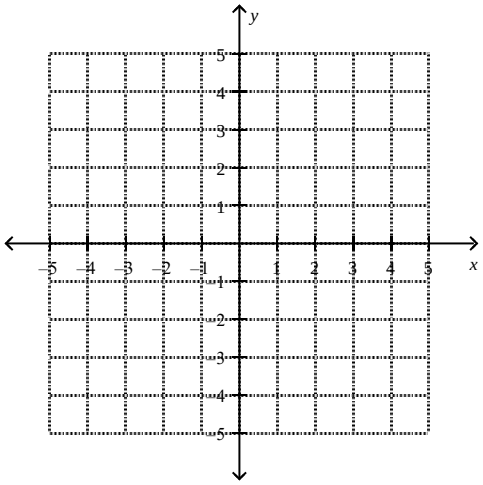
Multi-Step Equations anything goes	3. $9(w-4)-7w=5(3w-2)$ 4) $5-3(x-7)=2(2-x)-8$

Solve the Two-Step Equations – Integers

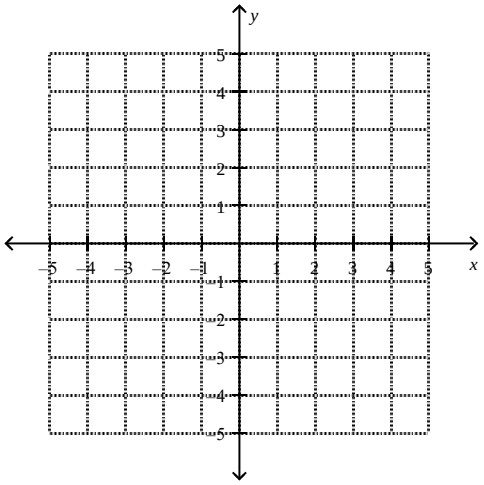
$3x + 7 = -11 + 2x$	$\frac{2m + 3}{m} = 1$
$-5(2 - w) = 10$	$a - 2 = \frac{a}{3}$
$\frac{b - 1}{2} = b$	$10 - 3k = -5k$

Graph the linear equations: (Hint: identify the slope and *y*-intercept)

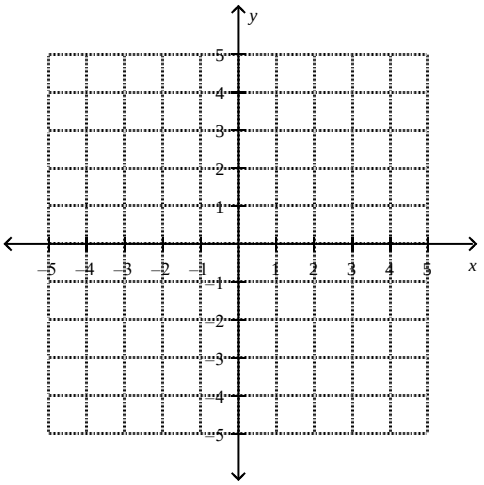
1. Graph: $y = \frac{1}{3}x - 2$.



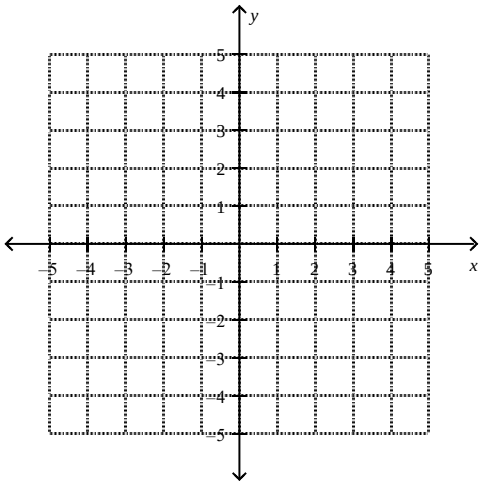
2. Graph: $y = -x + 5$.



3. Graph: $y = -\frac{3}{2}x + 3$



4. $y = 3x - 1$



Rewrite the equation so that y is a function of x Give the slope, y-intercept, and graph the equation	A) $-4x + y = 9$	B) $-19x + 9y = 8x - 9$
	C) $-3x + 7y - 7 = -1 - 8y$	D) $8x + 2(y + 13) = 10$

Rewrite the equation so that y is a function of x Then use the result to find y when x = -5, -1, 2, 4	1. $y - 4x = 9$	2. $6y - 6x = 15$
	3. $4 - y = 7x$	4. $5y - 5 = 6x$
	5. $2x + y = 4$	6. $5x - 5y = 15$

Rewrite the equation so that y is a function of x	1. $\frac{1}{3}y - 5 = 6x$ 2. $\frac{4}{5}y - 2 = -3x$ 3. $\frac{1}{9}y - 5 = \frac{7x}{2}$ 4. $\frac{2}{7}y - 5 = \frac{11x}{3}$

Linear Unit Part 5:

Solving Inequalities

Solving Inequalities

Vocabulary:

Inequality is a mathematical sentence that compares two unequal expressions.

Here is a chart of words or phrases associated with the inequality symbols:

$<$	$\leq$	$\geq$	$>$

Open dot means the number is _____ of the solution set, thus it is not shaded.

Closed dot means the number _____ of the solution set, thus it is shaded.

Solving Inequalities

Solve and graph the solution set for the following problems.

A. $-2x > 6$

B. $-\frac{1}{2}n \leq 5$

Try-It! Solve and graph the solution set.

$3 \geq 4d + 7$

Try-It! Solve and graph the solution set.

A. $-4p + 28 \geq 8$

B. $2h - 13 < -23$

Practice: Solve and graph the following inequalities, make your own number line.

1. $-5m < 20$

2. $\frac{j}{6} \leq 0$

3. $5a > -10$

4. $\frac{c}{-3} \geq 6$

5. $m + 6 > 2$

6. $y - 3 < -4$

7. $4x + 11 \geq 19$

8. $6 < \frac{x}{-2}$

9. $27 \geq -0.9r$

10. $5m - 3 > -18$

Multi-Step Inequalities

Solve and graph the solution set for the following problems.

Example 1: $9x + 4 \leq 3x - 14$

Example 2: $-2(x - 4) - 3x < 23$

Practice: Solve and graph the solution set for the following problems

1. $5x+3<2x+15$

2. $2(3+3g)>2g+14$

3. $2(3b-2)<4b+8$

4. $11y-2\le 3y+14$

5. $3q+6\le -5(q+2)$

6. $1<8+b$

7. $-4x-4<8$

8. $5-9c>-13$

9. A high school class is planning its annual hayride. There is a flat fee of $50 plus $30 per hour to hire the hay wagon. The class has a budget of $280 for the hayride.

Part A: Write an inequality to find *h*, the number of hours they can hire the hay wagon and stay within budget.

Part B: Solve the inequality.