

Name - Leila Flanagan

Algebra 1
2.7 - Point Slope Form
Notes

You already know slope-intercept form, write the formula below:

Slope-Intercept Form:

$$y = mx + b$$

You should use slope-intercept form when you are given:

- slope and y-intercept
- graph

Another way to write equations of lines is point-slope form.

Point-Slope Form:

$$y - y_1 = m(x - x_1)$$

You should use point-slope form when you are given:

- 2 points
- 1 point (not y-intercept) and slope

EX: Write in point-slope form.

$(1, -1), m = -2$

$$y - (-1) = -2(x - 1)$$

$$y + 1 = -2(x - 1)$$

EX: Write in point-slope form.

$(4, -3), m = \frac{1}{2}$

$$y - (-3) = \frac{1}{2}(x - 4)$$

$$y + 3 = \frac{1}{2}(x - 4)$$

EX: Write in slope-intercept form.

$$y + 3 = 4(x - 2)$$

$$y + 3 = 4x - 8$$

$$y = 4x - 11$$

EX: Write in point-slope form AND slope-intercept form.

$(2, -3)$ and $(4, -5)$ $m = \frac{y_2 - y_1}{x_2 - x_1}$

First, determine the slope.

$$m = \frac{-5 - (-3)}{4 - 2} = \frac{-2}{2}$$

$$m = -1$$

Then, write in point-slope form using EITHER point.

$$y - (-5) = -1(x - 4)$$

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

Then, rearrange the equation to isolate y (for slope-intercept form).

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

$$y + 5 = -x + 4$$

$$y = -x - 1$$

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Algebra 1
Unit 2 - Mid Unit Review

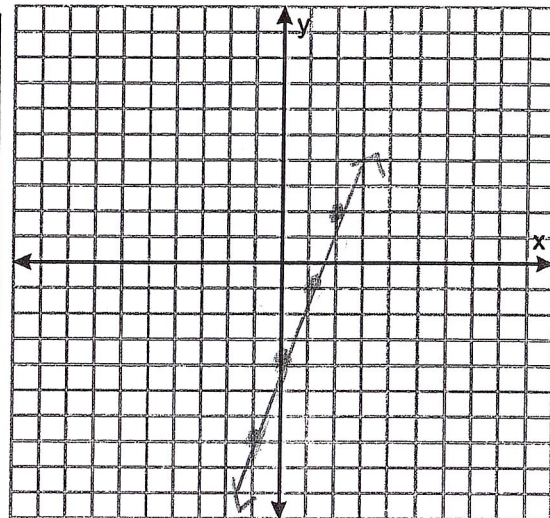
Use your review notes from class today to solve the following problems. These are the types of problems you will be asked to do on Thursdays Quick Quiz.

1. Graphing Lines using a Table:

Use a table to graph the following equations:

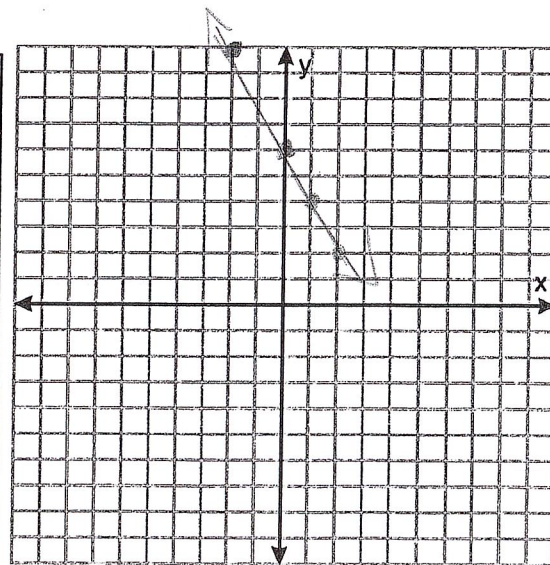
a. $y = 3x - 4$

x	$y = 3x - 4$	y	(x, y)
-1	$y = 3(-1) - 4$ $y = -7$	-7	(-1, -7)
0	$y = 3(0) - 4$ $y = -4$	-4	(0, -4)
2	$y = 3(2) - 4$ $y = 6 - 4$ $y = 2$	2	(2, 2)
1	$y = 3(1) - 4$ $y = 3 - 4$ $y = -1$	-1	(1, -1)



b. $y = -2x + 6$

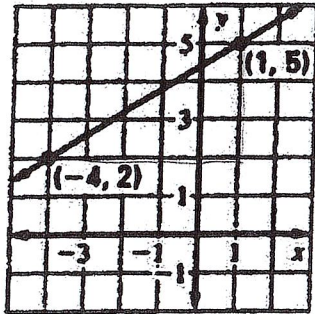
x	$y = -2x + 6$	y	(x, y)
1	$y = -2(1) + 6$ $y = -2 + 6$ $y = 4$	4	(1, 4)
-2	$y = -2(-2) + 6$ $y = 4 + 6$ $y = 10$	10	(-2, 10)
0	$y = -2(0) + 6$ $y = 6$	6	(0, 6)
2	$y = -2(2) + 6$ $y = -4 + 6$ $y = 2$	2	(2, 2)



3. Finding Slope from a Graph:

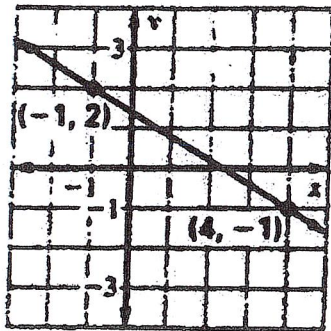
Identify the slope of the line on the graph.

a.

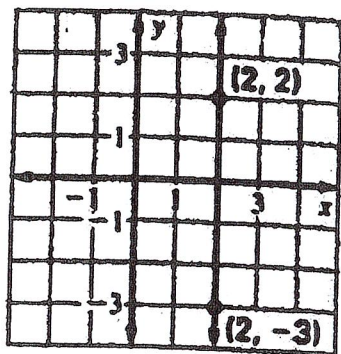


$(5, 3)$

b.



c.



Algebra 1
2.9 - Parallel and Perpendicular Lines
Notes

Parallel Lines:

- What do they look like?



2 lines that
will never cross
(railroad
tracks!)

- What is the symbol for parallel lines?



- Parallel lines have The same slope.

Example:

$$y = 6x + 7$$

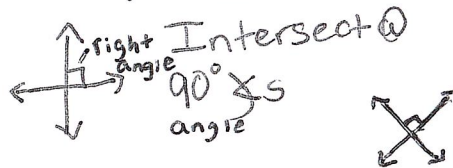
$$y = 6x - 2$$

$$y = 3x + 7$$

$$y = 3x + 1$$

Perpendicular Lines:

- What do they look like?



- What is the symbol for perpendicular lines?



- Perpendicular lines have opposite inverse slope.

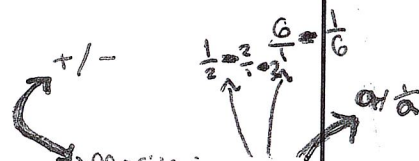
Example:

$$y = 2x + 1$$

$$y = -\frac{1}{2}x + 7$$

$$\frac{2}{1} \rightarrow -\frac{1}{2}$$

Flip numbers and
sign (- and +)



Find the slope of a line both parallel and perpendicular to the given slope.

1. $m = \frac{1}{2}$

parallel slope = $\frac{1}{2}$

perpendicular slope = -2

2. $m = -3$

parallel slope = -3

perpendicular slope = $\frac{1}{3}$

3. $m = -\frac{4}{5}$

parallel slope = $-\frac{4}{5}$

perpendicular slope = $\frac{5}{4}$

4. $m = 1$

parallel slope = 1

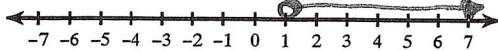
perpendicular slope = -1

3.1 Inequalities Practice

Date December 7

Translate, then draw a graph for each inequality.

1) $p > 1$



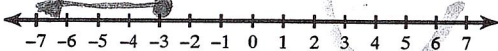
A number is greater than 1

2) $m < -1$



A number is less than -1

3) $x \leq -3$



A number is less than or equal to -3

4) $0 \geq r$



A number is less than or equal to 0

5) $-6 > k$



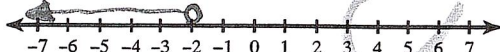
A number is less than -6

6) $-1 \leq x$



A number is greater than or equal to -1

7) $x < -2$



A number is less than -2

8) $x \leq 2$



A number is less than or equal to 2

Write an inequality for each graph.



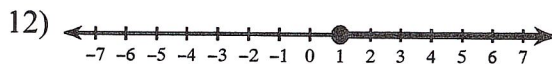
$$x \geq -2$$



$$x \geq -6$$



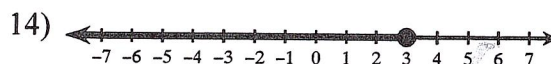
$$x < 0$$



$$x \geq 1$$



$$x < 6$$



$$x \leq 3$$

Solve each inequality and graph its solution.

15) $-10 \leq 9 + m$



$$\begin{array}{r} -10 \leq 9 + m \\ -9 \quad | \quad -9 \\ \hline \end{array}$$

$$-19 \leq m$$

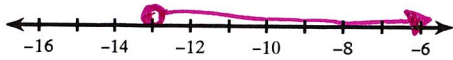
16) $-27 \geq x - 11$



$$\begin{array}{r} -27 \geq x - 11 \\ +11 \quad | \quad +11 \\ \hline \end{array}$$

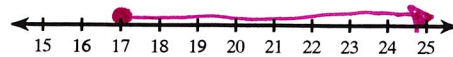
$$-16 \geq x$$

17) $a + 20 > 7$



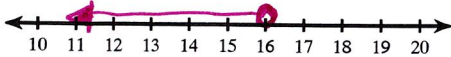
$$\begin{array}{r} a + 20 > 7 \\ -20 \quad | \quad -20 \\ \hline a > -13 \end{array}$$

18) $-3 \leq n - 20$



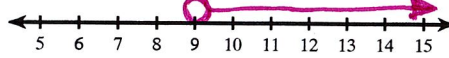
$$\begin{array}{r} -3 \leq n - 20 \\ +20 \quad | \quad +20 \\ \hline 17 \leq n \end{array}$$

19) $b - 13 < 3$



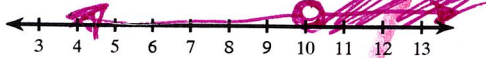
$$\begin{array}{r} b - 13 < 3 \\ +13 \quad | \quad +13 \\ \hline b < 16 \end{array}$$

20) $x - 18 > -9$



$$\begin{array}{r} \cancel{x - 18} > -9 \\ +18 \quad | \quad +18 \\ \hline x > 9 \end{array}$$

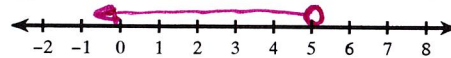
21) $7 > x - 3$



$$\begin{array}{r} 7 > x - 3 \\ +3 \quad | \quad +3 \\ \hline 10 > x \end{array}$$

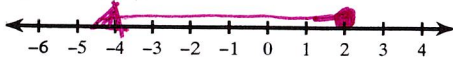
$$x < 10$$

22) $n - 12 > -7$



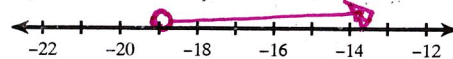
$$\begin{array}{r} n - 12 > -7 \\ +12 \quad | \quad +12 \\ \hline n > 5 \end{array}$$

23) $21 \geq x + 19$



$$\begin{array}{r} 21 \geq x + 19 \\ -19 \quad | \quad -19 \\ \hline 2 \geq x \end{array}$$

24) $-18 < 1 + n$



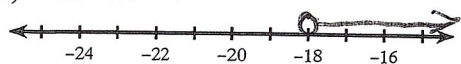
$$\begin{array}{r} -18 < 1 + n \\ -1 \quad | \quad -1 \\ \hline -19 < n \end{array}$$

Inequalities Practice 2

Date 12/21/2023

Solve each inequality and graph its solution.

1) $-25 < n - 7$

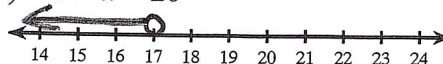


$$\begin{array}{r} -25 < n - 7 \\ +7 \quad +7 \end{array}$$

$$-18 < n$$

$$n > -18$$

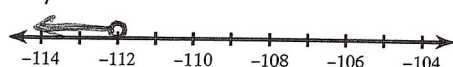
2) $-3 > x - 20$



$$\begin{array}{r} -3 > x - 20 \\ +20 \quad +20 \end{array}$$

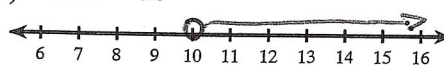
$$17 > x$$

3) $\frac{n}{7} < -16$



$$\begin{array}{r} \cancel{7} \frac{n}{\cancel{7}} < -16 \cdot 7 \\ n < -112 \end{array}$$

4) $-8a > -80$



$$\begin{array}{r} -8a > -80 \\ \cancel{-8} \quad \cancel{-8} \end{array}$$

$$a > 10$$

5) $-17 > \frac{x}{4}$



$$\begin{array}{r} 4. -17 > \frac{x}{4} \\ \cancel{4} \quad \cancel{4} \end{array}$$

$$-68 > x$$

6) $\frac{k}{15} < 18$



$$\begin{array}{r} 15. \frac{k}{15} < 18 \cdot 15 \\ \cancel{15} \quad \cancel{15} \end{array}$$

$$k < 270$$

$$270 > k$$

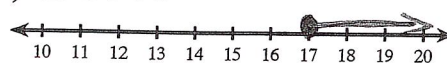
7) $r + 12 \geq 17$



$$\begin{array}{r} r + 12 \geq 17 \\ -12 \quad -12 \end{array}$$

$$r \geq 5$$

8) $25 \leq 8 + b$



$$\begin{array}{r} 25 \leq 8 + b \\ -8 \quad -8 \end{array}$$

$$17 \leq b$$

$$b \geq 17$$

$$9) -13b \geq 208$$



$$\begin{array}{r} -13b \geq 208 \\ \hline -13 \quad -13 \end{array}$$

$$b \geq -16$$

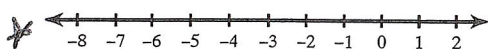
$$10) 11 \geq \frac{x}{20}$$



$$20 \cdot 11 \geq \frac{x}{20} \cdot 20$$

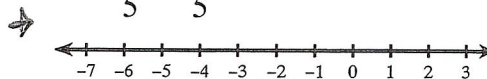
$$220 \geq x$$

$$11) \frac{49}{8} \leq -\frac{7}{2}a$$



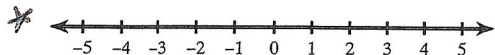
$$\frac{49}{8} \leq -\frac{7}{2}a$$

$$12) -\frac{3}{5}x \geq \frac{7}{5}$$



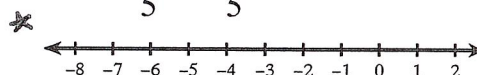
$$-\frac{3}{5}x \geq \frac{7}{5}$$

$$13) 1 + x \leq -\frac{5}{3}$$



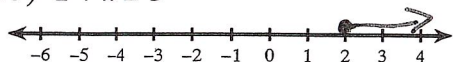
$$1 + x \leq -\frac{5}{3}$$

$$14) r - \frac{9}{5} \geq -\frac{19}{5}$$



$$r - \frac{9}{5} \geq -\frac{19}{5}$$

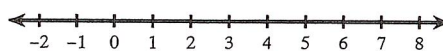
$$15) 1 + k \geq 3$$



$$\begin{array}{r} 1 + k \geq 3 \\ -1 \quad -1 \end{array}$$

$$k \geq 2$$

$$16) -\frac{24}{5} > -2x$$



$$-\frac{24}{5} > -2x$$

9. Simplify each of the following expressions.

✓ a. $3n + 3 + 7n$

$$\boxed{10n + 3}$$

✓ b. $8 + 5(n + 3)$

$$8 + 15 + 5n$$

$$\boxed{23 + 5n}$$

c. $-5(6p - 8) - 7$

$$-30p - 40 - 7$$

$$-30p - 47$$

10. Solve for the variable in each of the following equations and clearly show each step. **Remember to show checking as well!**

✓ a. $-28 = -2n$

$$\frac{-28}{-2} = \frac{-2n}{-2}$$

$$\boxed{n = 14}$$

$$-28 = -2(14)$$

$$-28 = -28 \checkmark$$

b. $2 = a - 16$

$$\begin{array}{r} 2 = a - 16 \\ +16 \quad +16 \\ \hline \end{array}$$

$$\boxed{18 = a}$$

$$2 = 18 - 16$$

$$2 = 2$$

✓ c. $-13 = \frac{k}{2}$

$$\begin{array}{r} -13 = \frac{k}{2} \\ \times 2 \quad \times 2 \\ \hline \end{array}$$

$$\boxed{-26 = k}$$

$$-13 = \frac{-26}{2}$$

$$-13 = -13$$

d. $3(8x + 3) = -183$

$$\begin{array}{r} 24x + 9 = -183 \\ -9 \quad -9 \end{array}$$

$$\begin{array}{r} 24x = -192 \\ 24 \quad 24 \end{array}$$

$$x = -8$$

$$3[8(-8) + 3] = -183$$

$$3[-64 + 3] = -183$$

$$-192 + 3$$

$$-189 = -183$$

e. $6r + 2 = -6 + 4r$

$$6r + 2 = -6 + 4r$$

$$\begin{array}{r} 10r + 2 = -6 \\ -2 \quad -2 \end{array}$$

$$\begin{array}{r} 10r = -8 \\ 10 \quad 10 \end{array}$$

$$r = -0.8$$

$$6(-0.8) + 2 = -6 + 4(-0.8)$$

$$-4.8 + 2 = -6 - 3.2$$

$$-2.8 =$$

f. $-7(1 - 4m) = 33 + 8m$

$$\begin{array}{r} -7 + 28m = 33 + 8m \\ -8m \quad -8m \end{array}$$

★
✓

g. $-2 + 8(3x - 5) = -6(1 + 2x)$

$$\begin{array}{r} -2 + 24x - 40 = -6 - 12x \\ +12x \quad +12x \end{array}$$

$$-2 + 36x - 40 = -6$$

$$\begin{array}{r} -42 + 36x = -6 \\ +42 \quad +42 \end{array}$$

$$\begin{array}{r} 36x = 36 \\ 36 \quad 36 \end{array}$$

$$x = 1$$

check $-2 + 8(3(1) - 5) = -6(1 + 2(1))$

$$-2 + 8(3 - 5) = -6(1 + 2)$$

$$-2 + 24 - 40 = -6 - 12$$

$$22 - 40 = -18$$

$$-18 = -18 \checkmark$$

Algebra 1
Midterm Review

Operations with Integers

Evaluate the expression, following the Order of Operations.

1. $1 + 5^2 \div 50$

$$\begin{array}{l} 1 + 25 \div 50 \\ 26 \div 50 \end{array} \quad (0.52)$$

2. $24 + 4(3 + 1)$

$$24 + 4 + 4$$

$$24 + 8$$

$$(32)$$

3. $12(6 - 3.5)^2 - 1.5$

$$12 + 2.5^2 - 1.5$$

$$12 + 6.25 - 1.5$$

$$12 + 4.75 \quad (16.75)$$

✓ 4. $8(20 - (9 - 5)^2)$

$$8(20 - 4^2)$$

$$8(20 - 16)$$

$$8(4) \quad (32)$$

✓ 5. $\frac{3(5-2)}{15 \div 5}$

$$\frac{3(3)}{15 \div 5} \quad \frac{9}{3} \quad (3)$$

6. Use the distributive property to write an equivalent expression.

*don't solve

a. $8(y + 2)$

$8y + 16$

b. $(m + 5)5$

$5m + 25$

c. $-2(3 - x)$

$-6 + 2x$

Expressions and Equations

7. Evaluate each expression if $a = 5$, $b = -2$ and $c = -4$.

a. $a - bc$ $5 - (-2)(-4) = 5 - 8 = -3$

b. $2b + 4ac$ $2(-2) + 4(5)(-4) = -4 - 80 = -84$

c. $\frac{b}{ac}$ $\frac{-2}{5(-4)} = \frac{-2}{-20} = \frac{1}{10}$

8. Evaluate each expression if $a = \frac{1}{2}$, $b = -5$ and $c = -4$

a. $3b - 4a$ $3(-5) - 4(\frac{1}{2}) = -15 - 2 = -17$

b. $2ab - 4ac$ $2(\frac{1}{2})(-5) - 4(\frac{1}{2})(-4) = -5 - 4(\frac{1}{2})(-4) = -5 - 4(\frac{1}{2})(-4) = -5 - 9(\frac{1}{2})(-4) = -5 - 4.5(-4) = -5 + 18 = 13$

11. Write each as an algebraic expression.

- ✓ a. The difference of 15 and u

$$15 - u$$

- b. 14 more than y

- c. 4 more than twice the product of x and y

12. Write each as an algebraic equation (you do not have to solve for the variable).

- a. Half of u is equal to 27

- b. Twice n is 44

- c. Two more than the product of 5 and x is equal to 12

Name - Leila Flanagan

Geometry
2.10 - Standard Form
Notes

Slope-intercept form: $y = mx + b$

Point-slope form: $y - y_1 = m(x - x_1)$

****Standard form:** $Ax + By = C$ where A, B, and C are integers

→ Whole Numbers

→ Must be + number

EX: Rewrite in **standard** form.

$$\begin{array}{r} y = -4x - 1 \\ +4x \quad +4x \end{array}$$

~~y =~~ $y + 4x = -1$

$$\boxed{4x + y = -1}$$

EX: Write in **standard** form, by following the steps.

(1, 2), (2, -1)

Determine the slope.

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

Write in **point-slope** form:

$$\star \boxed{y - 2 = -3(x - 1)}$$

Rewrite in **slope-intercept** form:

$$y - 2 = -3x + 3$$

$$\star \boxed{y = -3x + 5}$$

Rewrite in **standard** form:

$$+3x \quad +3x$$

$$y + 3x = 5$$

$$\boxed{3x + y = 5}$$

EX: Write in standard form, by following the steps.

(2, -5), (0, -3)

Determine the slope.

$$m = \frac{-5 - (-3)}{2 - (0)} = \frac{-2}{2} = -1$$

Write in point-slope form:

$$y + 5 = -1(x - 2)$$

$$y + 3 = -1(x - 0)$$

Rewrite in slope-intercept form:

$$y + 5 = -x + 2$$

$$y = -x - 3$$

Rewrite in standard form:

$$x + y = -3$$

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Algebra 1

3.1 Solving Inequalities Using Addition/Subtraction

Inequalities represent mathematical situations where two values are not equal, but we may not know exactly the value of one or the other. We do, however, know the relationship between the two values.

Inequality Symbols:

$<$	$>$	$\leq$	$\geq$
Less than	Greater than	Less than or equal to	Greater than or equal to

Graphs of Inequalities:

$x > 7$ or $7 < x$	 Translate: A number is greater than 7
$x < 7$ or $7 > x$	 Translate: A number is less than 7
$x \leq 7$ or $7 \geq x$	 Translate: A number is less than or equal to 7
$x \geq 7$ or $7 \leq x$	 Translate: A number is greater than or equal to 7

Example 1: You must be at least 16...

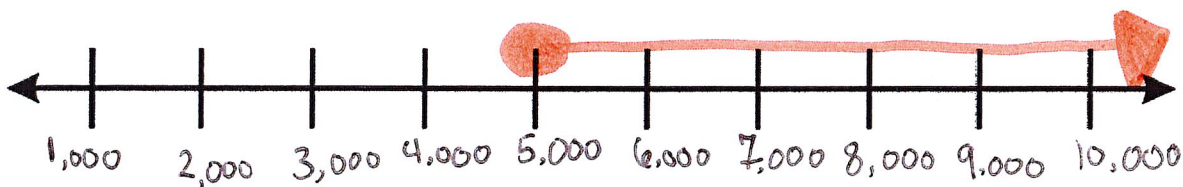
You must be 16 years old or older to get your driver's license. Write and graph an inequality to describe the ages of people who may get their driver's license.



$a = \text{age}$ $a \geq 16$

You try...

Food Drive Your school wants to collect at least 5000 pounds of food for a food drive. Write and graph an inequality to describe the amount of food that your school hopes to collect.



$P = \text{Pounds}$
~~of food~~
of food

$P \geq 5000$

Solving Inequalities:



**Solving inequalities is very similar to solving equations (Unit 1). Whatever you do to one side of the inequality, you must do to the other side.

ADDITION PROPERTY OF INEQUALITY

Words Adding the same number to each side of an inequality produces an equivalent inequality.

Algebra If $a > b$, then $a + c > b + c$.

If $a < b$, then $a + c < b + c$.

If $a \geq b$, then $a + c \geq b + c$.

If $a \leq b$, then $a + c \leq b + c$.

SUBTRACTION PROPERTY OF INEQUALITY

Words Subtracting the same number from each side of an inequality produces an equivalent inequality.

Algebra If $a > b$, then $a - c > b - c$.

If $a < b$, then $a - c < b - c$.

If $a \geq b$, then $a - c \geq b - c$.

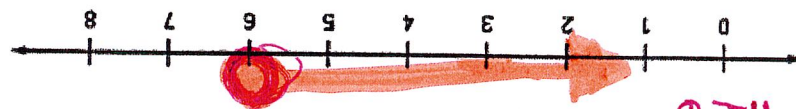
If $a \leq b$, then $a - c \leq b - c$.

Example 2:

a) $n - 3.5 < 2.5$

$$+ 3.5 \quad | \quad + 3.5$$

$$n < 6$$



a number is less than 6

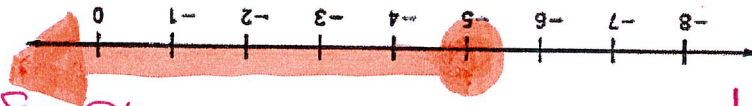


b) $3 \leq y + 8$

$$- 8 \quad | \quad - 8$$

$$- 5 \leq y \rightarrow y \geq - 5$$

a number is greater than or equal to -5



You Try...

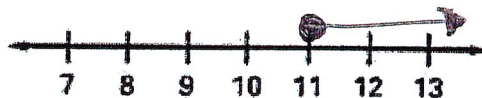
2. $6 > y - 3.3$

$+3.3$ $+3.3$
 $9.3 > y$



3. $z - 7 \geq 4$

$+7$ $+7$
 $z \geq 11$



4. $r + 3\frac{1}{4} < 5$

$-3\frac{1}{4}$ $-3\frac{1}{4}$

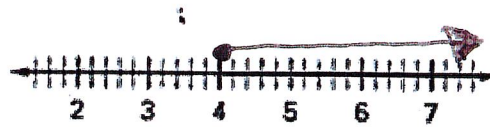
$r < 2\frac{1}{4}$



5. $3 + m \geq 7.2$

-3 -3

$m \geq 4.2$



Name - Leila Fanagan

Algebra 1

2.4 - Writing Equations in Slope-Intercept Form

Notes

$$y = mx + b$$

slope

y-intercept

Slope Formula:

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

- 1) Identify y-intercept (where graph crosses y-axis). This is **b**.
- 2) Identify the slope. This is **m**. Use a strategy below:
 - a) Use the graph to calculate rise over run.
 - OR**
 - b) Use the slope formula (above).
 - OR**
 - c) Use the slope given to you.
- 3) Write your equation filling in **m** and **b**. $y = mx + b$

Write the equation of the line based on the given information:

3. slope: $2 = m$
 y-intercept: $9 = b$
 $y = 2x + 9$
 $y = mx + b$

4. slope: 0
 y-intercept: 5
 $y = 5$

5. slope: -3
 y-intercept: 0
 $y = -3x$

6. slope: -7
 y-intercept: 1
 $y = -7x + 1$

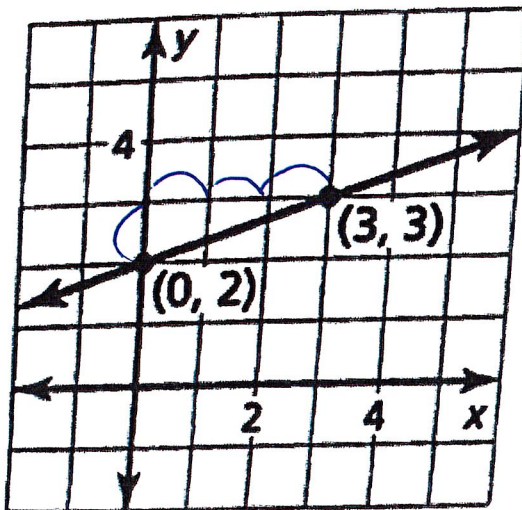
7. slope: $\frac{3}{2}$
 y-intercept: -8
 $y = \frac{3}{2}x - 8$

8. slope: $-\frac{4}{3}$
 y-intercept: -6
 $y = -\frac{4}{3}x - 6$

Write the equation of the line based on the given information:

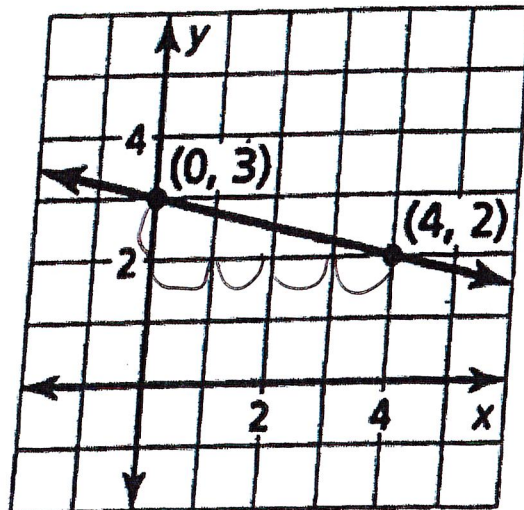
~~y =~~ $y = \text{int} = b$

9.



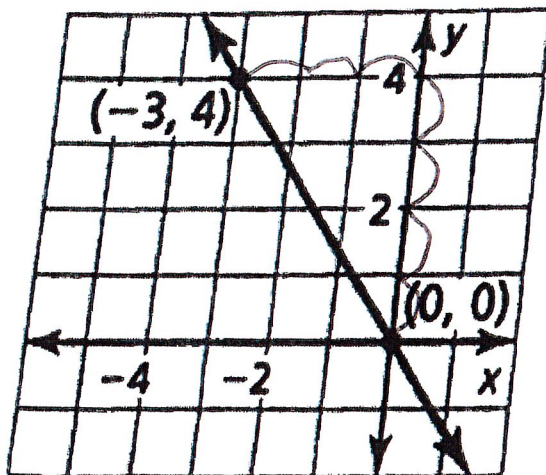
$b = 2$
 $m = \frac{1}{3}$ $y = \frac{1}{3}x + 2$

10.



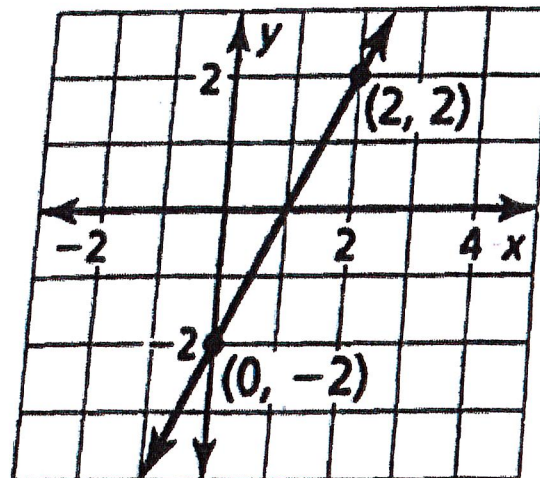
$b = 3$
 $m = -\frac{1}{4}$ $y = -\frac{1}{4}x + 3$

11.



$b = 0$
 $m = -\frac{4}{3}$ $y = -\frac{4}{3}x$

12.



$b =$

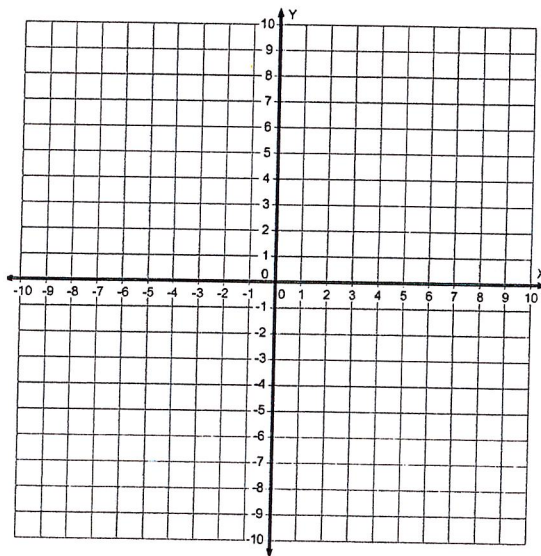
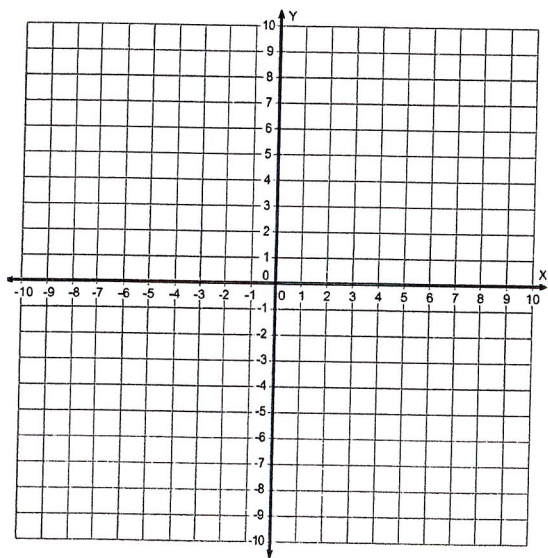
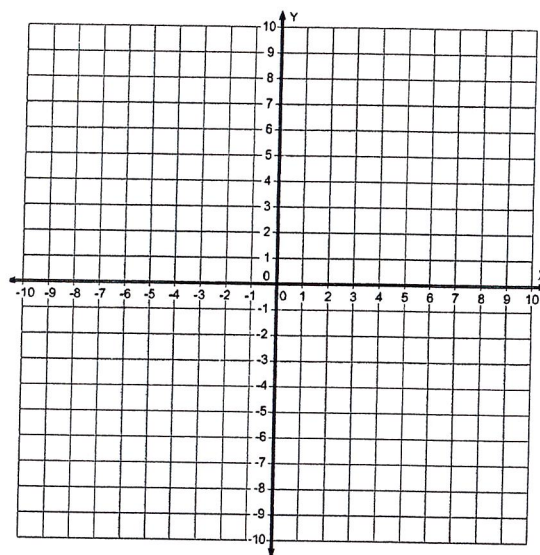
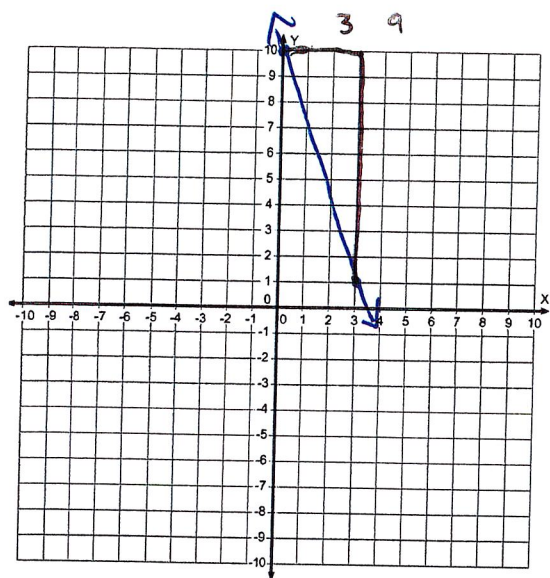
Write the equation of the line based on the given information:

13. $(3, 1), (0, 10)$

14. $(2, 7), (0, -5)$

15. $(2, -4), (0, -4)$

16. $(-6, 0), (0, -24)$



Name - Leila Hagan

Algebra I 2.5 - Graphing in Slope-Intercept Form

Notes

- 1) (IF NEEDED) Rearrange the equation so that it is in Slope-Intercept Form (y must be by itself).
- 2) Identify slope and y-intercept.
- **Write slope as rise over run**
- 3) Plot the y-intercept.
- 4) Use the slope to plot another point → go up the # of rise, and go left (negative slope) or right (positive slope) the # of run.
- 5) Use a ruler or straightedge to connect your two points.

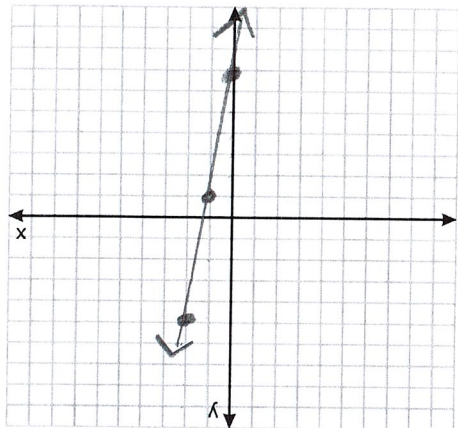
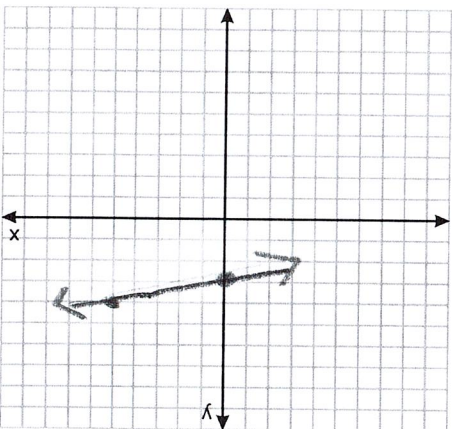
Example:

a) $y = \frac{5}{1}x + 3$
 $m = \frac{5}{1} = 5$ - rise
 $b = 3 - (0, 3)$

b) $-12x + 2y = -14$
 $+12x$
 $2y = 12x - 14$
 $\frac{2y}{2} = \frac{12x - 14}{2}$
 $y = 6x - 7$

$b = -7 - (0, -7)$

$m = \frac{6}{1} = 6$ - rise



Identify the slope and y-intercept of each of the following.

2.5 Practice

1) $y = 5x - 4$
 $m = 5$
 $b = -4$

2) $y = 10x + 2$
 $m = 10$
 $b = 2$

3) $y = 2 - 6x$
 $m = -6$
 $b = 2$

4) $y = 3 - x$
 $m = -1$
 $b = 3$

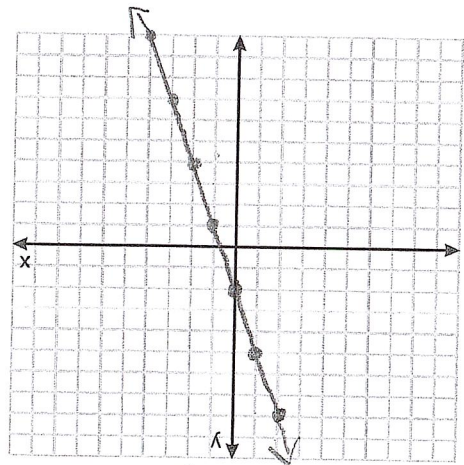
5) $12x + 3y = 9$
 $-12x$
 $3y = -12x + 9$
 $y = -4x + 3$
 $m = -4$
 $b = 3$

6) $6x - 2y = 2$
 $-6x$
 $-2y = -6x + 2$
 $y = 3x - 1$
 $m = 3$
 $b = -1$

7) $4y + 6x = 2$
 $-6x$
 $4y = -6x + 2$
 $y = -\frac{3}{2}x + \frac{1}{2}$
 $m = -\frac{3}{2}$
 $b = \frac{1}{2}$

8) $8y + 2x = 5$
 $-2x$
 $8y = -2x + 5$
 $y = -\frac{1}{4}x + \frac{5}{8}$
 $m = -\frac{1}{4}$
 $b = \frac{5}{8}$

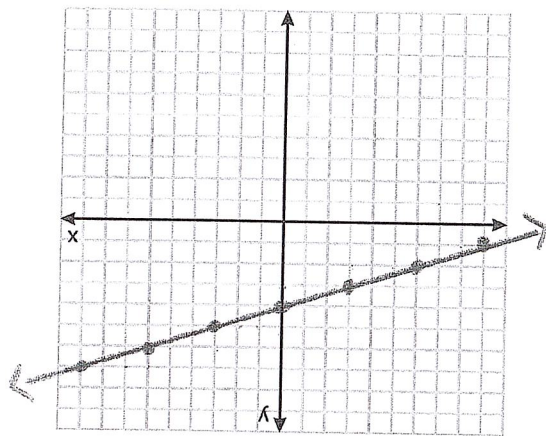
Graph each of the following lines.



$$m = -3$$

$$b = 2$$

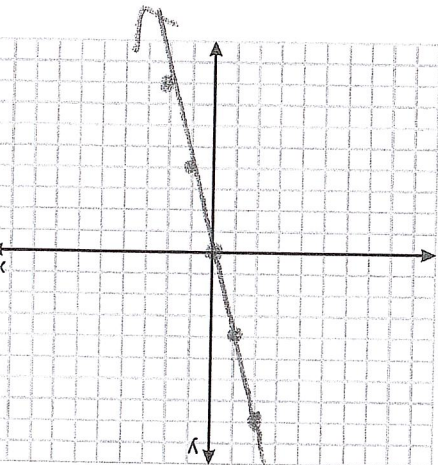
$$9) y = -3x + 2$$



$$m = \frac{1}{3}$$

$$b = 4$$

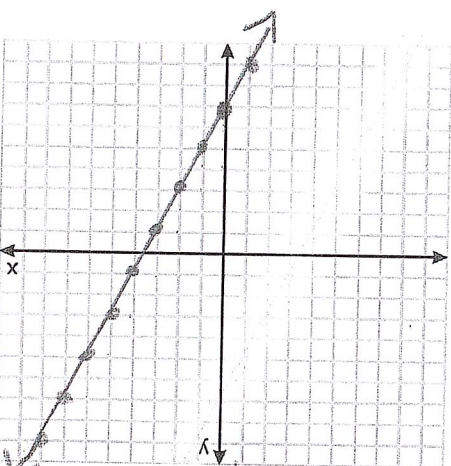
$$10) y = \frac{1}{3}x + 4$$



$$m = -4$$

$$b = 0$$

$$12) y = -4x$$

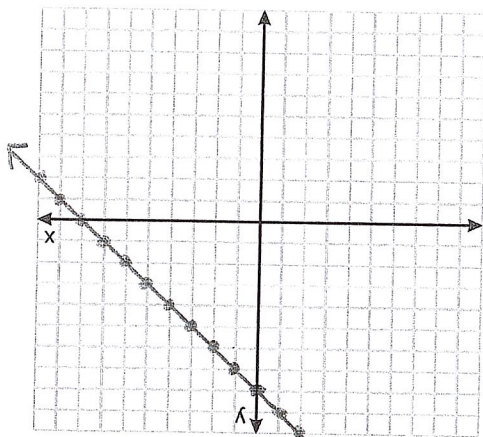


$$m = 2$$

$$b = 7$$

$$y = 2x + 7$$

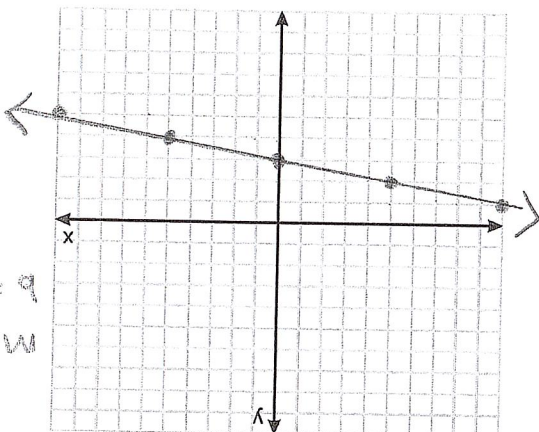
$$13) 2x - 1y = 7$$



$$m = -1$$

$$b = 8$$

$$11) y = -x + 8$$



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

$$b = -3$$

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

$$14) x + 5y = -15$$

Name - Leila Flanagan

Algebra 1

2.6 - Writing an Equation of a Line in Slope-Intercept Form

Notes

$$y = mx + b$$

1. Identify the slope m. You can use the slope formula to calculate the slope if you know two points on the line.

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

2. Find the y-intercept b. You can substitute the slope and the coordinates of a point (x,y) on the line into $y = mx + b$. Then solve for b.

3. Write an equation using $y = mx + b$.

Write an Equation given the Slope and a Point:

- Write an equation of the line that passes through the point (1, 2) and has a slope of 3.

$$\begin{aligned} y &= mx + b \\ 2 &= 3(1) + b \\ 2 &= 3 + b \\ -3 & \quad -3 \end{aligned}$$

$$\begin{aligned} y &= 3x - 1 \\ y &= 3x + (-1) \end{aligned}$$

- Write an equation of the line that passes through the point (2, 2) and has a slope of 4.

$$\begin{aligned} y &= mx + b \\ 2 &= 4(2) + b \\ 2 &= 8 + b \end{aligned}$$

$$b = -6$$

$$y = 4x - 6$$

Write an Equation given Two Points:

- Write an equation of the line that passes through (2, -3) and (-2, 1).

$$m = \frac{1 - (-3)}{-2 - 2}$$

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

$$m = -1$$

$$\begin{aligned} y &= mx + b \\ -3 &= (-1)(2) + b \\ -3 &= -2 + b \end{aligned}$$

$$-1 = b$$

$$\begin{aligned} y &= -1x - 1 \\ y &= -x - 1 \end{aligned}$$

- Write an equation of the line that passes through (-3, 4) and (1, 2).

$$m = \frac{2 - 4}{1 - (-3)}$$

$$m = -\frac{2}{4}$$

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

$$y = mx + b$$

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

$$\frac{4}{2} = -\frac{1}{2} + b$$

$$+\frac{1}{2} \quad +\frac{1}{2}$$

$$\frac{5}{2} = b$$

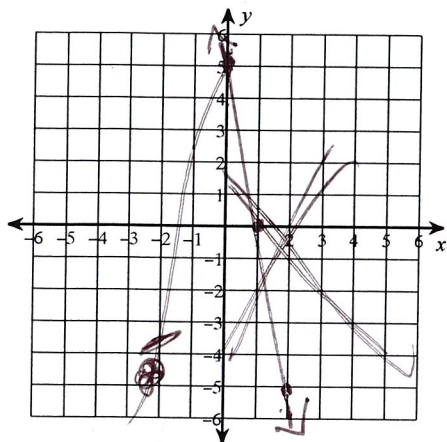
$$y = -\frac{1}{2}x + \frac{5}{2}$$

Unit 2 Review Packet

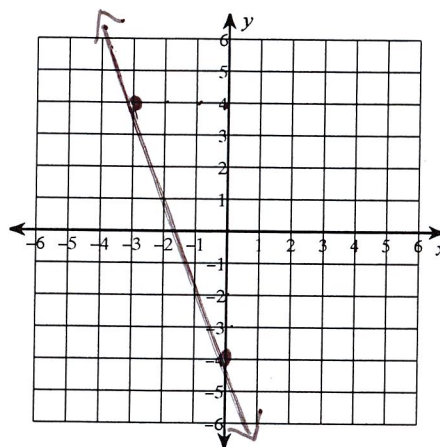
Date December 1 2023

Sketch the graph of each line. You may use a table, or use the slope and y-intercept.

1) $y = 5x + 5$

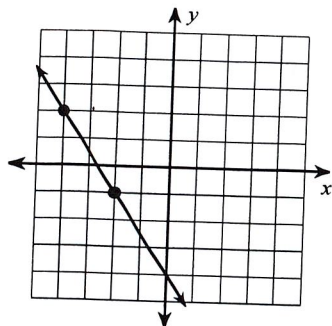


2) $y = \frac{8}{3}x - 4$



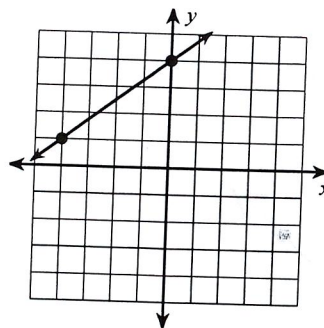
Find the slope of each line.

7)



$$y = -2x - 1$$

8)



Find the slope of the line through each pair of points.

9) $(17, -3), (16, -1)$

10) $(-9, 9), (1, 10)$

Find the slope of each line.

11) $y = -x - 2$

12) $y = -\frac{7}{3}x - 3$



years since (1980)	0	5
Trash	152	164

$$m = \frac{12}{5}$$

$$= 2.4$$

$$\begin{aligned} y - 152 &= \frac{12}{5}(x - 0) \\ y - 152 &= \frac{12}{5}x - 0 \\ +152 & \quad +152 \end{aligned}$$

$$y = \frac{12}{5}x + 152$$

