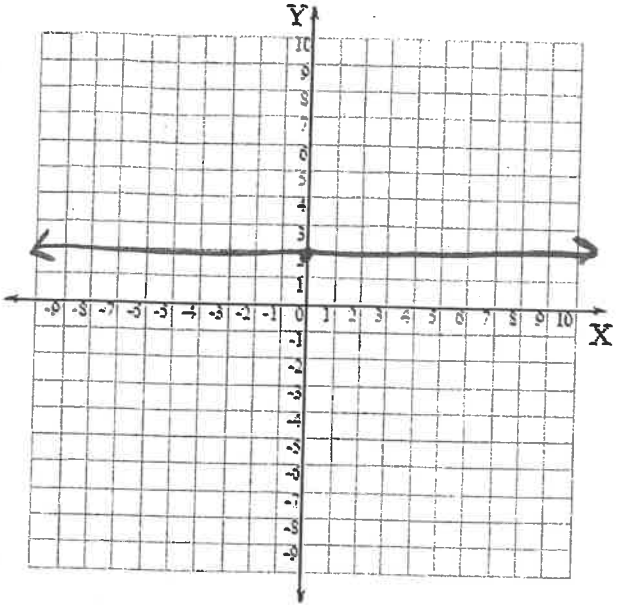
Algebra 1 – Chapter 3B
Lesson 4
Name: Key

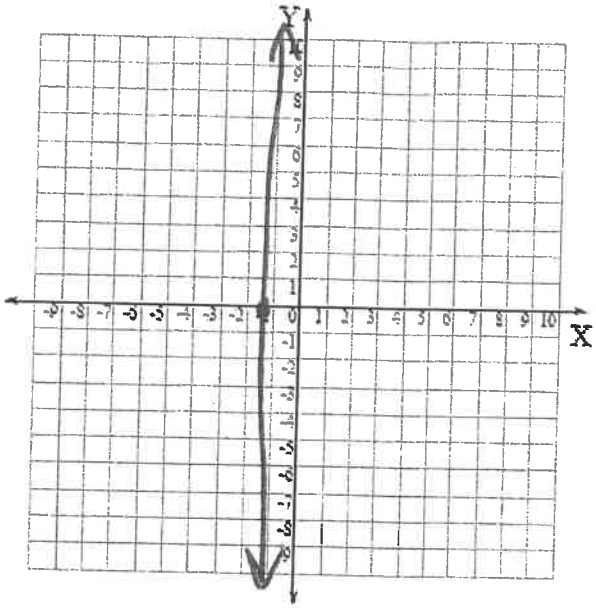
Date _____

Graph the linear equation.

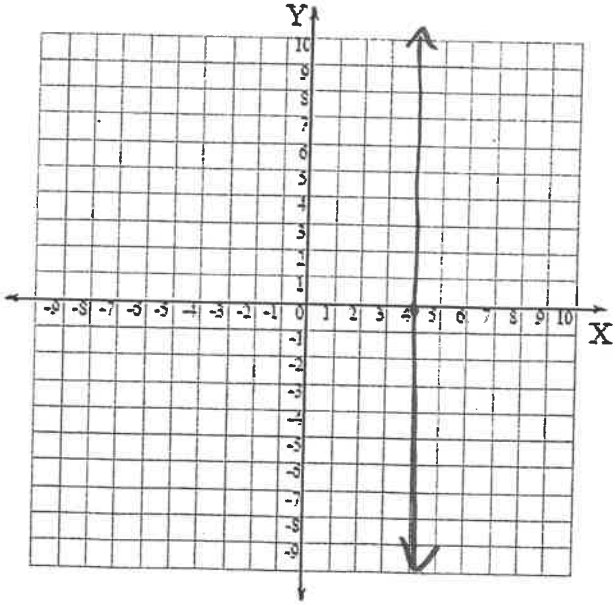
1. y = 2



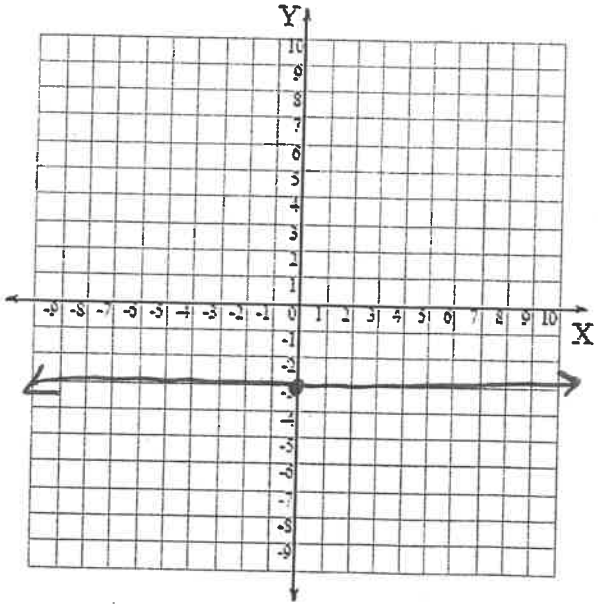
2. x = -1



3. x = 4



4. y = -3



Algebra 1 – Chapter 3B

Lesson 4

Find the x- and y-intercepts of the graph of the linear function.

5. $3x + 6y = 24$

$3(0)+6y=24$
$6y=24$
$y=4$
$3x+6(0)=24$
$3x=24$
$x=8$

y-int: 4
x-int: 8

6. $-4x + 8y = -16$

$-4(0)+8y=-16$
$8y=-16$
$y=-2$
$-4x+8(0)=-16$
$-4x=-16$
$x=4$

y-int: -2
x-int: 4

7. $-6x + 9y = -18$

$-6(0)+9y=-18$
$9y=-18$
$y=-2$
$-6x+9(0)=-18$
$-6x=-18$
$x=3$

y-int: -2
x-int: 3

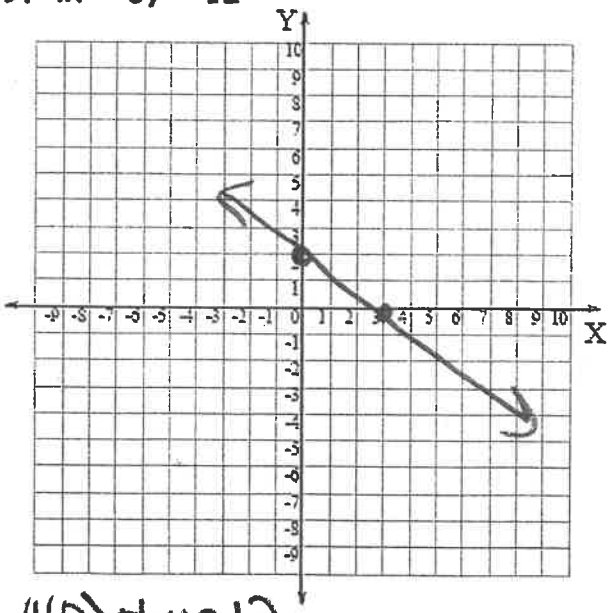
8. $-x + 8y = 4$

$-(0)+\frac{8y}{8}=\frac{4}{8}$
$y=\frac{1}{2}$
$-x+8(0)=4$
$-x=4$
$x=-4$

y-int: $\frac{1}{2}$
x-int: -4

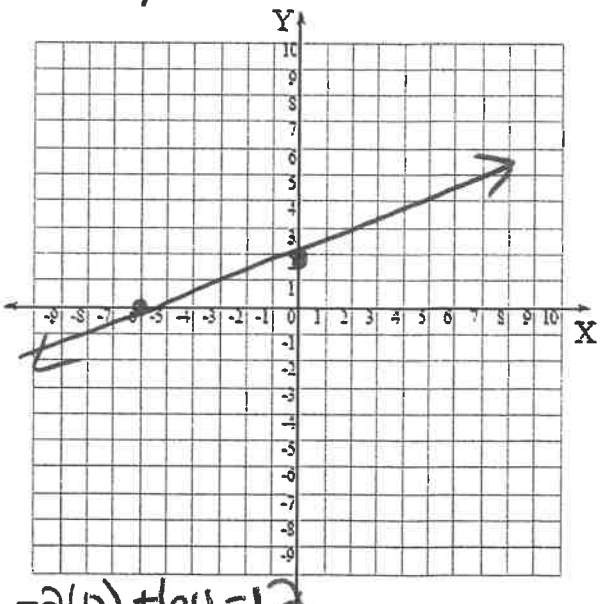
Use intercepts to graph the linear equation. Label the points corresponding to the intercepts.

9. $4x + 6y = 12$



$4(0)+6y=12$
$6y=12$
$y=2$
$4x+6(0)=12$
$4x=12$
$x=3$

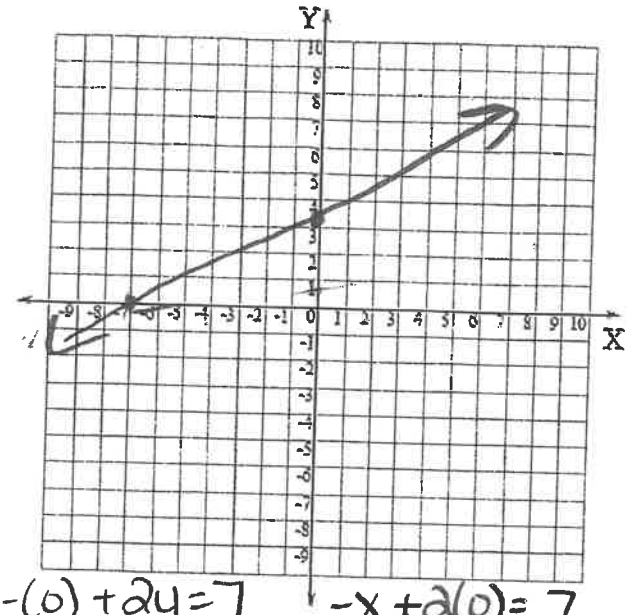
10. $-2x + 6y = 12$



$-2(0)+6y=12$
$6y=12$
$y=2$
$-2x+6(0)=12$
$-2x=12$
$x=-6$

Algebra 1 – Chapter 3B
Lesson 4

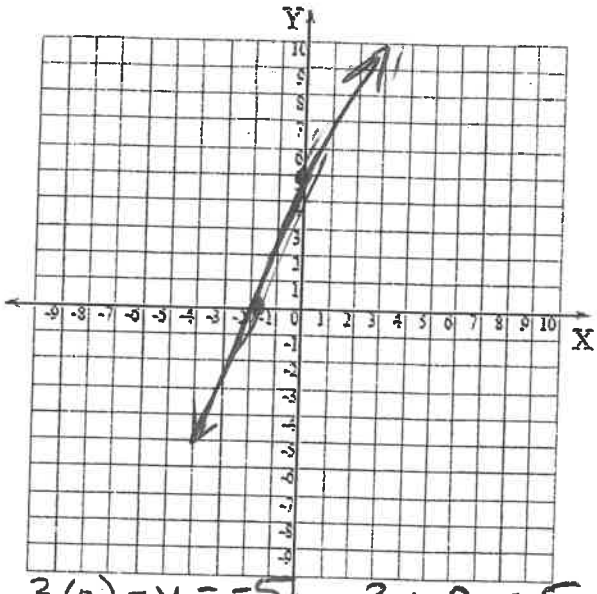
11. $-x + 2y = 7$



$-(0) + 2y = 7$
$2y = 7$
$y = 7/2$

$-x + 2(0) = 7$
$-x = 7$
$x = -7$

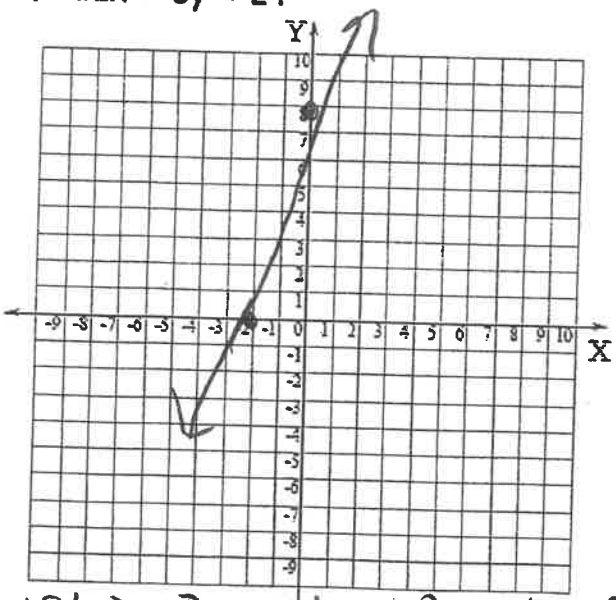
12. $3x - y = -5$



$3(0) - y = -5$
$-y = -5$
$y = 5$

$3x - 0 = -5$
$3x = -5$
$x = -5/3$

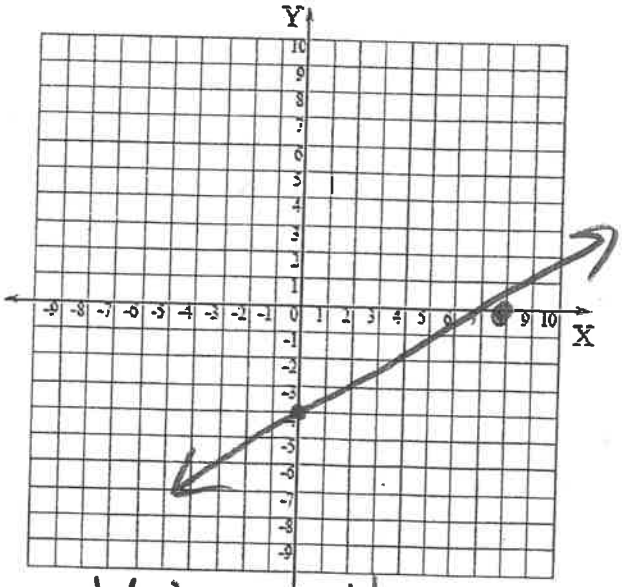
13. $-12x + 3y = 24$



$-12(0) + 3y = 24$
$3y = 24$
$y = 8$

$-12x + 3(0) = 24$
$-12x = 24$
$x = -2$

14. $-\frac{1}{2}x + y = -4$



$-\frac{1}{2}(0) + y = -4$
$y = -4$

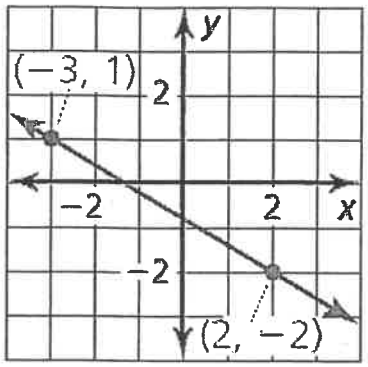
$-\frac{1}{2}x + (0) = -4$
$-\frac{1}{2}x = -4$
$\boxed{x = 8}$

Algebra 1 – Chapter 3B
Lesson 5, Day 1

Name: Key **Date** _____

Describe the slope of the line. Then find the slope.

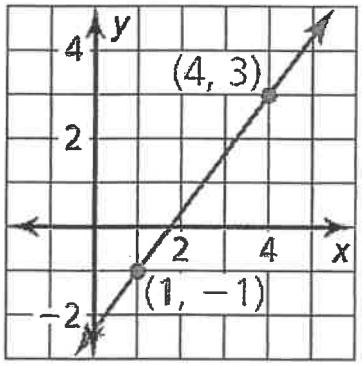
1.



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

Negative Slope

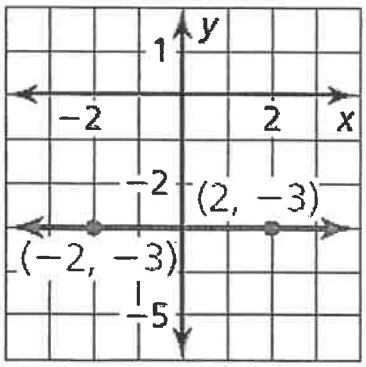
2.



Positive Slope

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

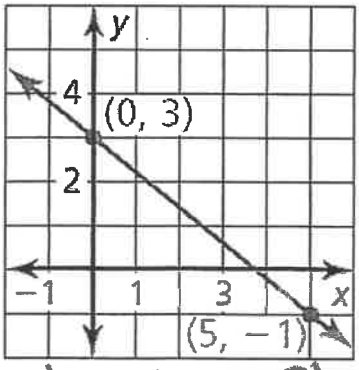
3.



0 slope

$\frac{-3+(+3)}{2+(-2)} = \frac{0}{4} = 0$

4.



Negative Slope

$\frac{3+(-1)}{0-5} = \frac{4}{-5}$

Algebra 1 – Chapter 3B
Lesson 5, Day 1

The points represented by the table lie on a line. Find the slope of the line.

5.

x	-9	-5	-1	3
y	-2	0	2	4

$\frac{-2-0}{-9+(-5)} = \frac{-2}{-4} = \frac{1}{2}$

6.

x	-1	2	5	8
y	-6	-6	-6	-6

$\frac{-6-(-6)}{-1-2} = \frac{0}{-3} = 0$

7.

x	0	0	0	0
y	-4	0	4	8

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

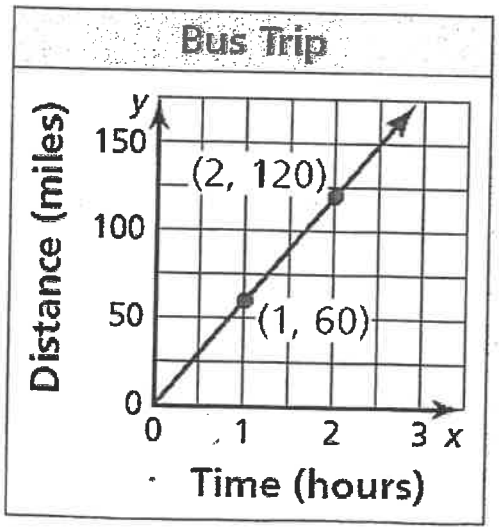
undefined

8.

x	-4	-3	-2	-1
y	2	-5	-12	-19

$\frac{2-(+5)}{-4+(+3)} = \frac{-7}{-1} = \boxed{-7}$

9. The graph shows the distance y (in miles) that a bus travels in x hours. Find and interpret the slope of the line.



$\frac{120-60}{2-1} = \frac{60}{1} = 60$

Bus travels 60 miles in 1 hour.
Is traveling at 60 mph

e

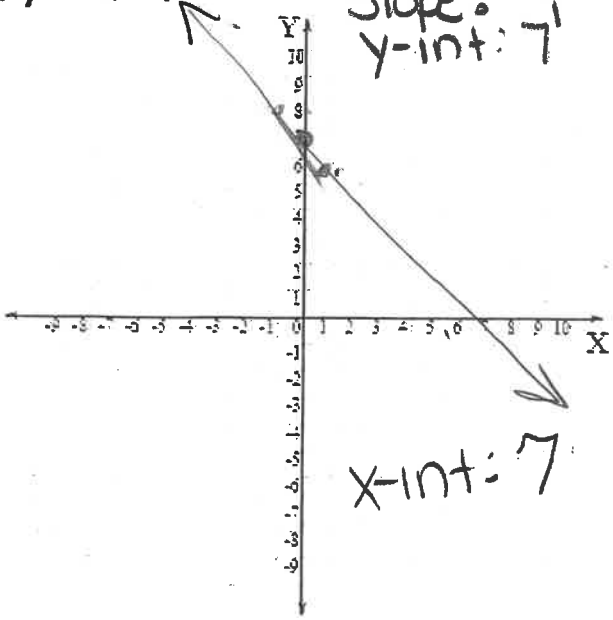
Algebra 1 – Chapter 3B
Lesson 5, Day 2

Name: Key **Date** _____

Graph the linear equation. Identify the x-intercept.

1. y = -x + 7

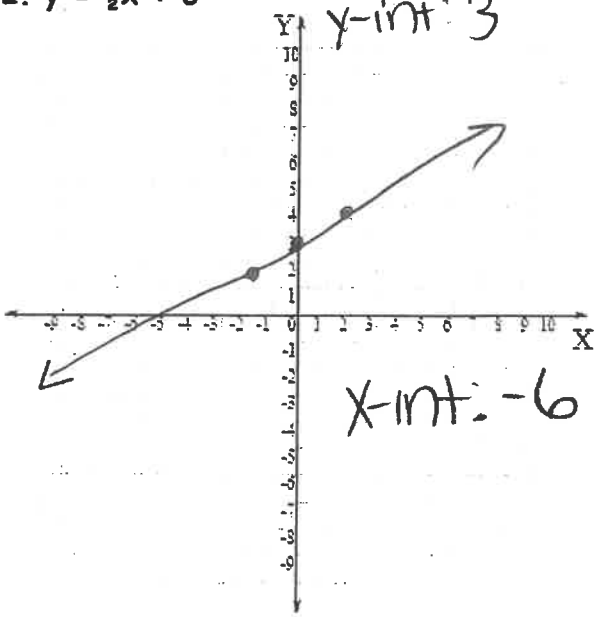
Slope: $-\frac{1}{1}$
y-int: 7



x-int: 7

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

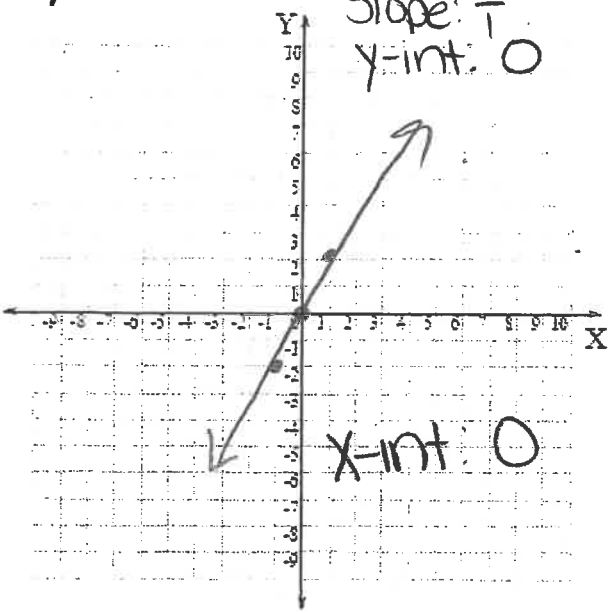
Slope: $\frac{1}{2}$
y-int: 3



x-int: -6

3. y = 2x

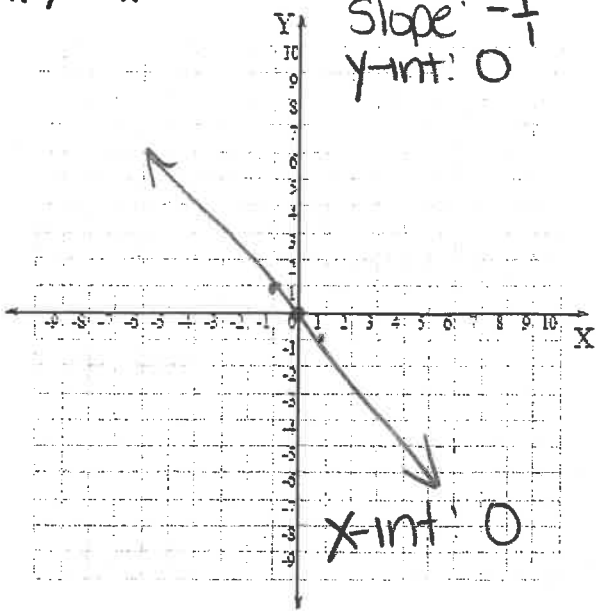
Slope: $\frac{2}{1}$
y-int: 0



x-int: 0

4. y = -x

Slope: $-\frac{1}{1}$
y-int: 0

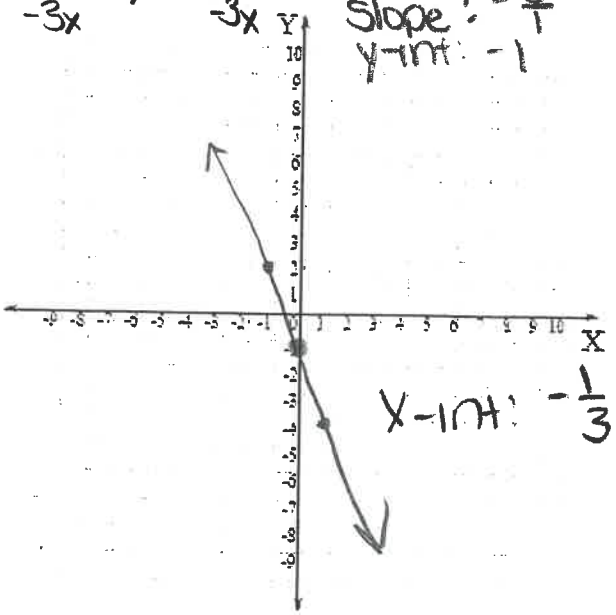


x-int: 0

Algebra 1 – Chapter 3B
Lesson 5, Day 2

5. $3x + y = -1$
$-3x \quad -3x$

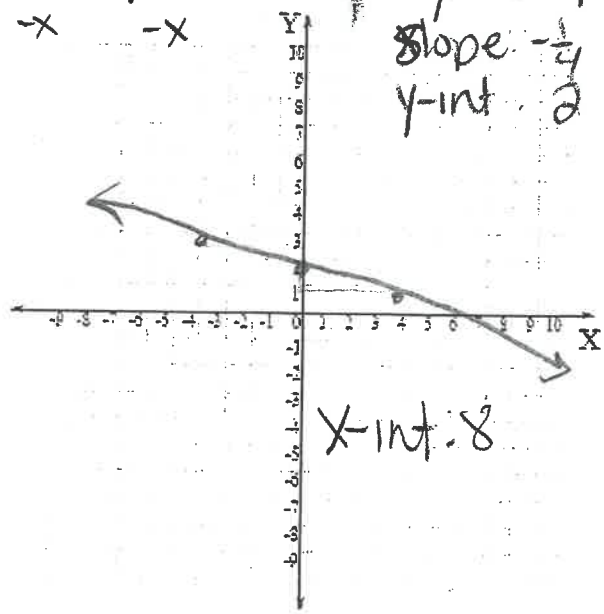
$y = -3x - 1$
Slope: $-\frac{3}{1}$
y-int: -1



X-int: $-\frac{1}{3}$

6. $x + 4y = 8$
$-x \quad -x$

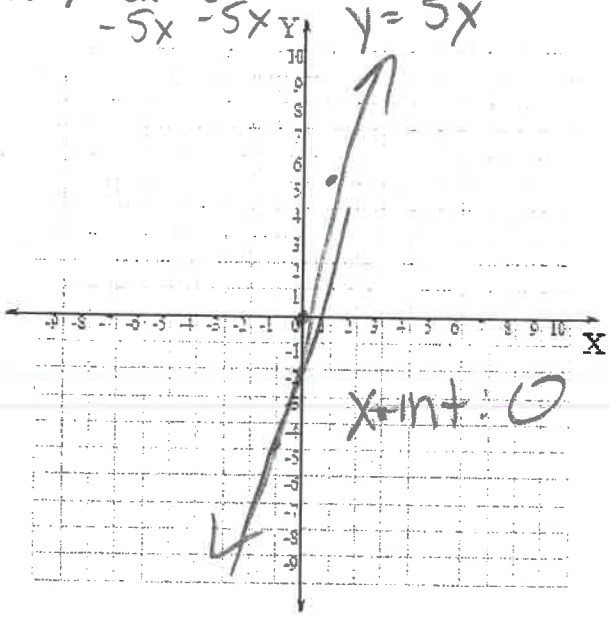
$\frac{4y}{4} = \frac{-x}{4} + \frac{8}{4}$
$y = -\frac{1}{4}x + 2$
Slope: $-\frac{1}{4}$
y-int: 2



X-int: 8

7. $-y + 5x = 0$
$-5x \quad -5x$

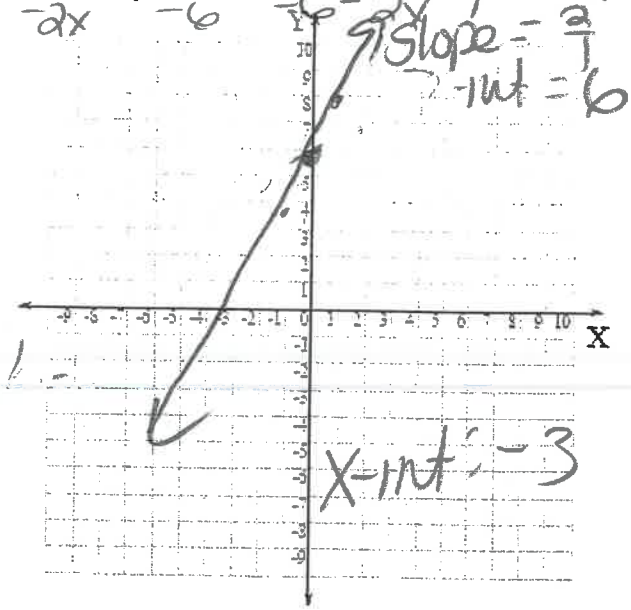
$\frac{-y}{-1} = \frac{-5x}{-1}$
$y = 5x$



X-int: 0

8. $2x - y + 6 = 0$
$-2x \quad -6 \quad -6 \quad -2x$

$\frac{-y}{-1} = \frac{-2x}{-1} \frac{-6}{-1}$
$y = 2x + 6$
Slope $= \frac{2}{1}$
y-int $= 6$



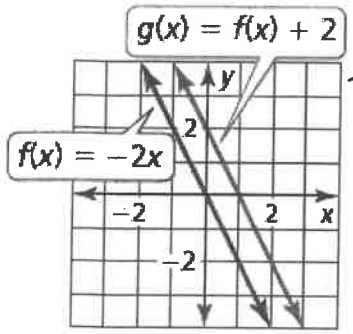
X-int: -3

Algebra 1 – Chapter 3B
Lesson 6, Day 1

Name: Key **Date** _____

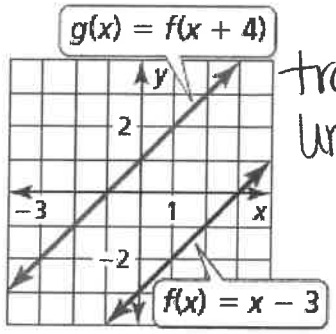
Use the graphs or information provided of *f* and *g* to describe the transformation from the graph of *f* to the graph of *g*.

1.



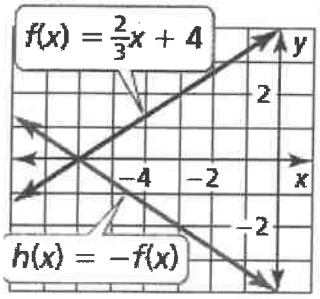
translate 2 units up

2.



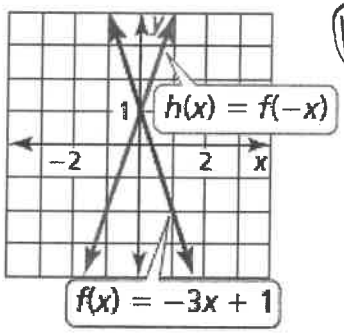
translate 4 units left

3.



Reflect X-axis

4.



Reflect y-axis

3. $f(x) = \frac{1}{3}x + 3;\ g(x) = f(x) - 3$

Translate 3 units down

4. $f(x) = -3x - 4;\ g(x) = f(x) + 1$

Translate 1 unit up

5. $f(x) = -x - 2;\ g(x) = f(x + 5)$

Translate 5 units left

6. $f(x) = \frac{1}{2}x - 5;\ g(x) = f(x - 3)$

Translate 3 units right.

7. $f(x) = -5 - x$; $g(x) = f(-x)$

Reflect y-axis

8. $f(x) = \frac{1}{4}x - 2$; $g(x) = -f(x)$

Reflect x-axis

Write a function *g* in terms of *f* so that the statement is true.

9. **The graph of *g* is a horizontal translation 2 units right of the graph of f.**

$g(x) = f(x-2)$

10. **The graph of g is a reflection in the y-axis of the graph of x.**

$g(x) = f(-x)$

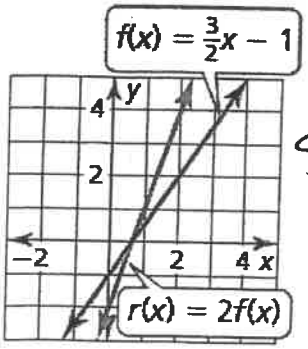
Algebra 1 – Chapter 3B
Lesson 6, Day 2

Name: Key

Date _____

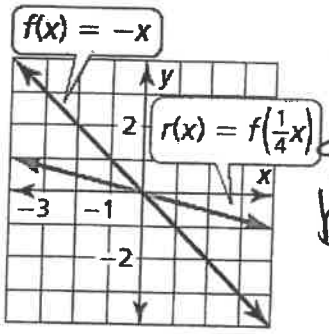
Use the graphs or information provided of *f* and *g* to describe the transformation from the graph of *f* to the graph of *g*.

1.



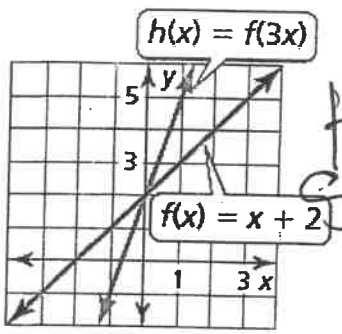
Vertical Stretch by 2

2.



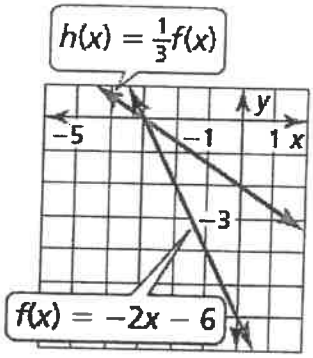
Horizontal stretch by 4

3.



Horizontal Shrink by $\frac{1}{3}$

4.



Vertical Shrink by $\frac{1}{3}$

5. $f(x) = x$; $h(x) = (\frac{1}{2}x) + 1$

Horizontal stretch by 2
translate 1 unit up

6. $f(x) = x$; $h(x) = 4(x - 2)$

Vertical stretch by 4
translate 2 units right

7. $f(x) = x$; $h(x) = -(3x) - 4$

Reflect x-axis
horizontal shrink by $\frac{1}{3}$
trans 4 units down

8. $f(x) = x$; $h(x) = -\frac{1}{2}(x + 3)$

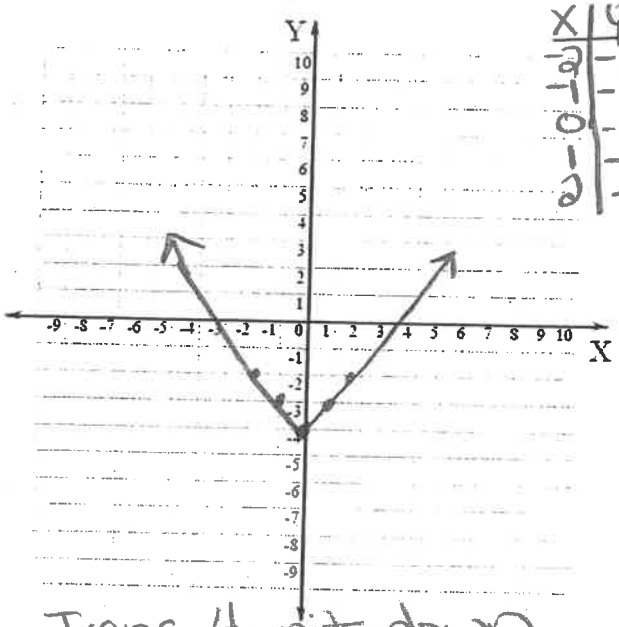
Reflect ~~x~~-axis
Vertical Shrink by $\frac{1}{2}$
trans 3 units left

Algebra 1 – Chapter 3
Lesson 7, Day 1
Name: Key

Date _____

Graph the Function. Compare the graph to the graph of f(x) = |x|. Describe the domain and range.

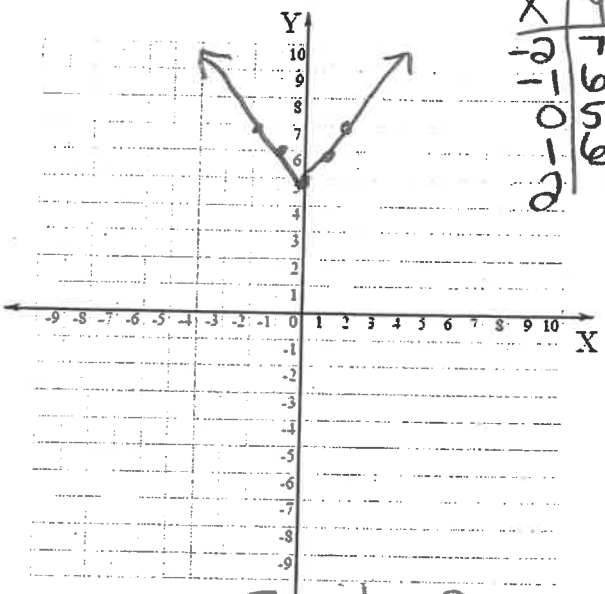
1. d(x) = |x| - 4



x	y
-2	-2
-1	-3
0	-4
1	-3
2	-2

Trans 4 units down
D: ARN
R: $y \geq 4$

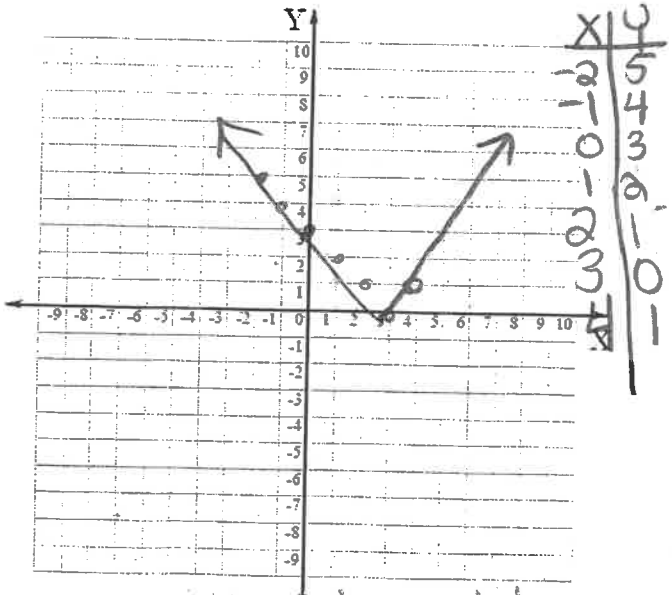
2. R(x) = |x| + 5



x	y
-2	7
-1	6
0	5
1	6
2	7

Trans 5 units up
D: ARN
R: $y \geq 5$

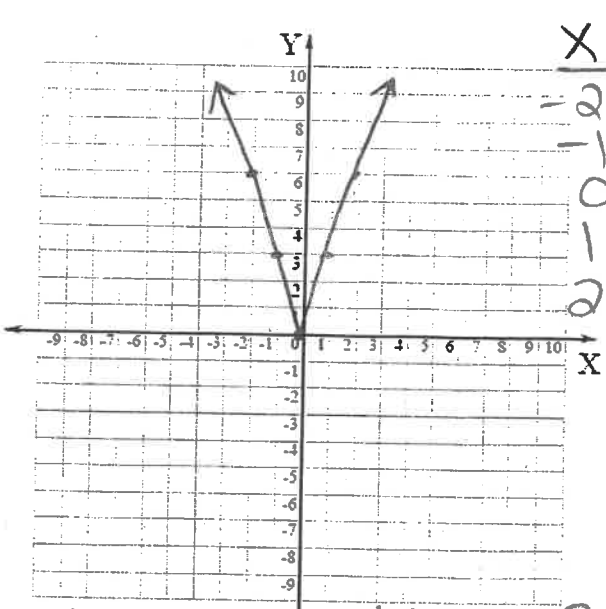
3. v(x) = |x – 3|



x	y
-2	5
-1	4
0	3
1	2
2	1
3	0
4	1

Trans 3 units right
D: ARN
R: $y \geq 0$

4. J(x) = 3|x|



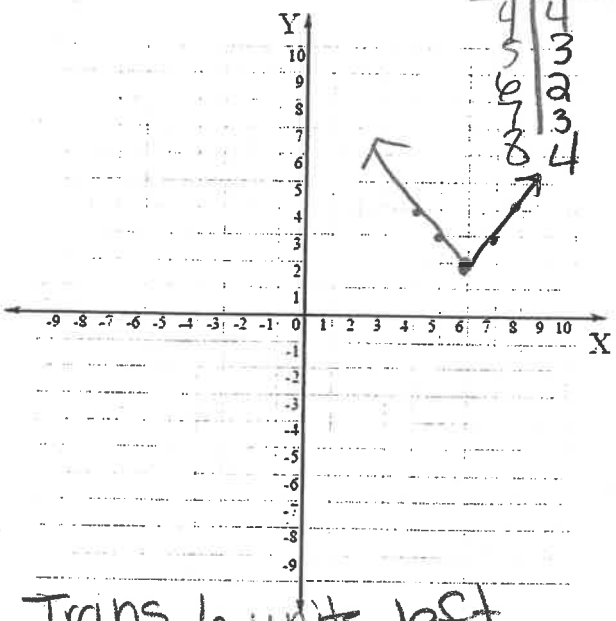
x	y
-2	6
-1	3
0	0
1	3
2	6

Vertical stretch by 3
D: ARN
R: $y \geq 0$

Algebra 1 – Chapter 3
Lesson 7, Day 1

5. $h(x) = |x - 6| + 2$

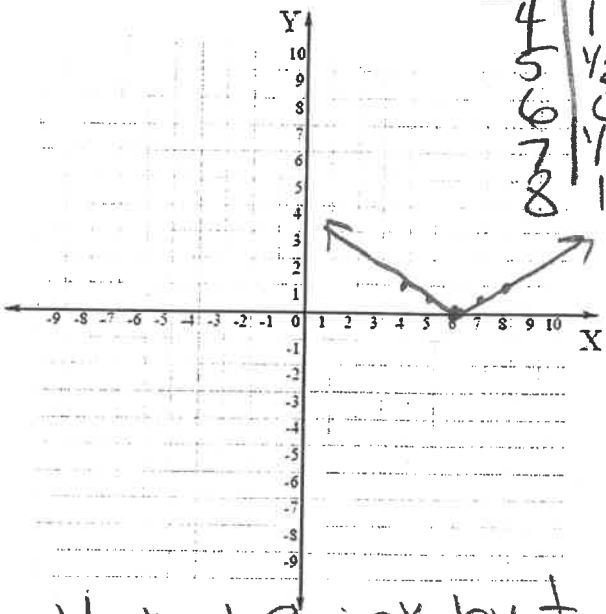
X	Y
4	4
5	3
6	2
7	3
8	4



Trans 6 units left
Trans 2 units up
D: ARN
R: $y \geq 2$

6. $N(x) = \frac{1}{2}|x - 6|$

X	Y
4	1
5	1/2
6	0
7	1/2
8	1



Vertical Shrink by $\frac{1}{2}$
Trans 6 units right
D: ARN
R: $y \geq 0$

Write an equation that represents the given transformation(s) of the graph of $g(x) = |x|$

7. Vertical translation 7 units down

$f(x) = |x|$
Trans 7 down → output -7
$f(x) = |x| - 7$

8. Horizontal Translation 10 units left

$f(x) = |x|$
Trans 10 left → input $(x+10)$
$f(x) = |x+10|$

9. Vertical shrink by a factor of $\frac{1}{4}$

$f(x) = |x|$
Vert. Shrink by $\frac{1}{4}$ → output $\cdot \frac{1}{4}$
$f(x) = \frac{1}{4}|x|$

10. Vertical stretch by a factor of 3 and a reflection in the x-axis.

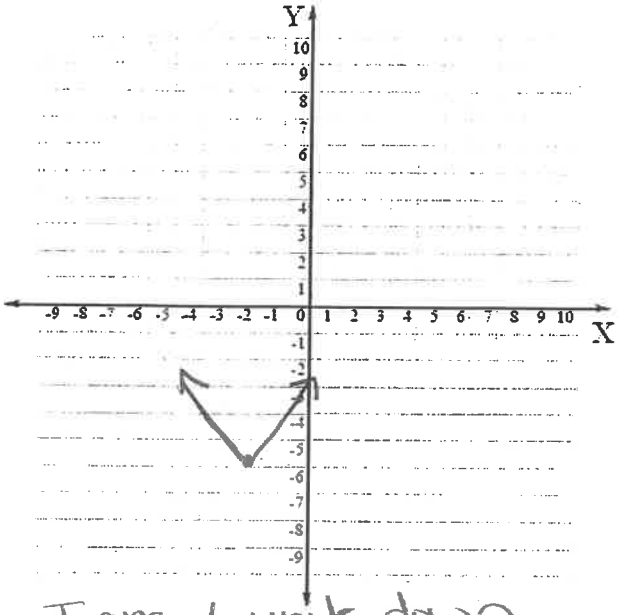
Vert. stretch by 3 → output $\cdot 3$
$f(x) = 3|x|$
Reflect x-axis → output $\cdot -$
$f(x) = -3|x|$

Algebra 1 – Chapter 3
Lesson 7, Day 2
Name: Key

Date _____

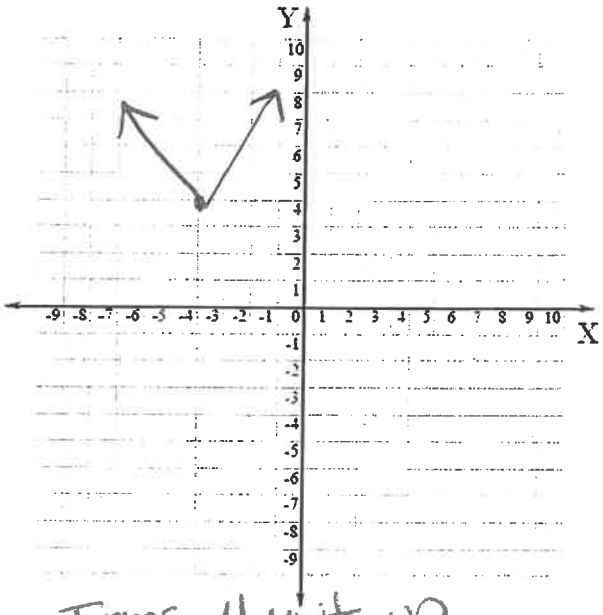
Describe the transformation from the graph of f(x) = |x| to the graph of the given function. Then graph the function.

1. r(x) = |x + 2| - 6



Trans 6 units down
Trans 2 units left

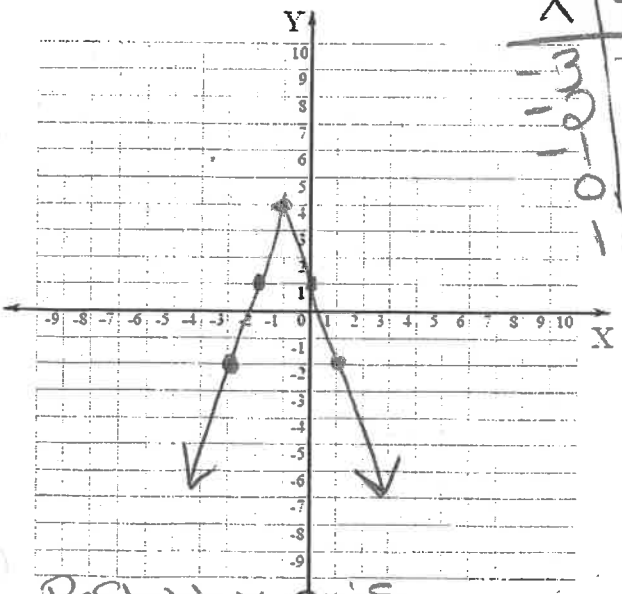
2. C(x) = |x + 4| + 4



Trans 4 units up
Trans 4 units left

3. v(x) = -3|x + 1| + 4

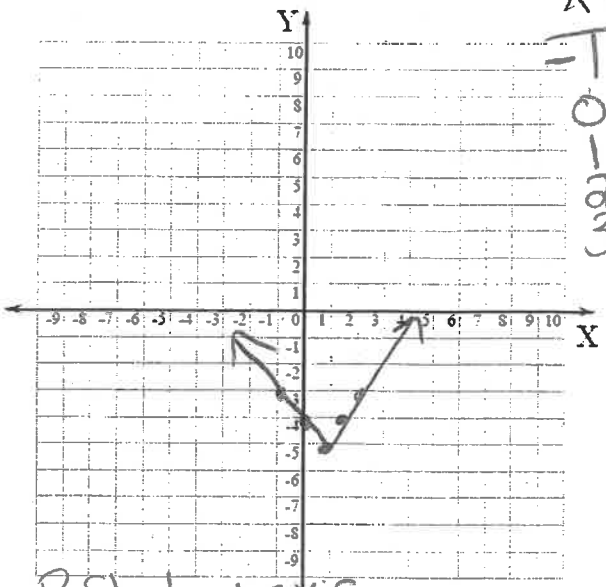
X	Y
-3	-2
-2	1
-1	4
0	1
1	2



Reflect x-axis
Vert. Stretch by 3
Trans 1 unit left
Trans 4 units up

4. F(x) = |-x + 1| - 5

X	Y
-1	-3
0	-4
1	-5
2	-4
3	-3



Reflect y-axis
Trans 1 unit right
Trans 5 units down

Algebra 1 – Chapter 3

Lesson 7, Day 2

Explain how the graph of each function compares to the graph of y = |x| for positive and negative values of k, h, and a.

a. Y = |x| + k

If $K > 0$ → trans up

If $K < 0$ → trans down

b. Y = |x - h|

If $h > 0$ → trans right

If $h < 0$ → trans left

c. Y = a|x|

If $a < 0$ → Reflect x-axis + vertical stretch or shrink

If $a > 0$ → No Reflection, but still vertical stretch or shrink

d. Y = |ax|

If $a < 0$ → Reflect y-axis + horizontal stretch or shrink

If $a > 0$ → No Reflection, but still horizontal stretch or shrink.

Algebra 1 – Chapter 4
Lesson 1
Name: Key Date _____

Write an equation of the line with the given slope and y-intercept.

1. Slope: 2
   Y-Intercept: 9

   $y=2x+9$

2. Slope:0
   Y-Intercept: 5

   $y=0x+5$
   $y=5$

3. Slope: -3
   Y-Intercept: 0

   $y=-3x+0$
   $y=-3x$

4. Slope: -7
   Y-Intercept: 1

   $y=-7x+1$

5. Slope: $\frac{2}{3}$
   Y-Intercept: -8

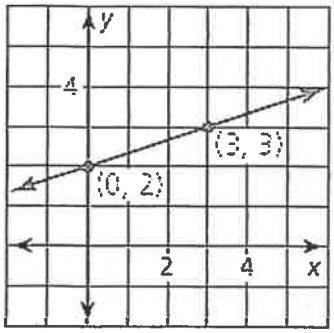
   $y=2/3x-8$

6. Slope: $-\frac{3}{4}$
   Y-Intercept: -6

   $y=-\frac{3}{4}x-6$

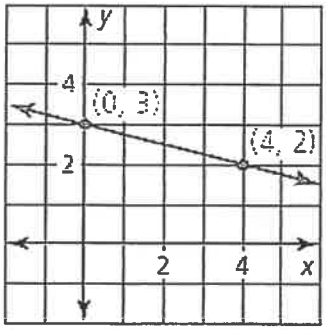
Write an Equation of the line in slope-intercept form.

7.



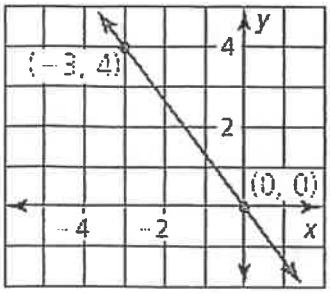
$m=\frac{3-2}{3-0}=\frac{1}{3}$
$2=\frac{1}{3}(0)+b$
$2=0+b$
$b=2$
$y=\frac{1}{3}x+2$

8.



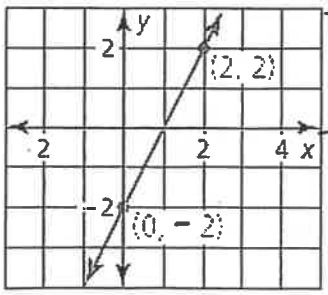
$m=\frac{3-2}{0-4}=-\frac{1}{4}$
$3=-\frac{1}{4}(0)+b$
$3=b$
$y=-\frac{1}{4}x+3$

9.



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

10.



$\frac{2-2}{0-2}=\frac{-4}{-2}=2$
$2=0(2)+b$
$-2=b$
~~$y=2x-2$~~
~~$y=2$~~
$\boxed{y=2x-2}$

Algebra 1 – Chapter 4
Lesson 1

Write an equation of the line that passes through the given points.

11. (3, 1), (0, 10)

$\frac{10-1}{0-3} = \frac{9}{-3} = -3$

$10 = -3(0) + b$

$10 = b$

$y = -3x + 10$

12. (2, 7), (0, -5)

$\frac{7-(-5)}{2-0} = \frac{12}{2} = 6$

$-5 = 6(0) + b$

$-5 = b$

$y = 6x - 5$

13. (2, -4), (0, -4)

y-int: -4

$m = \frac{-4-(-4)}{0-2} = \frac{0}{-2}$

$y = 0x - 4$

$y = -4$

14. (-6, 0), (0, -24)

y-int: -24

$m = \frac{-24-0}{0+(+6)} = \frac{-24}{6} = -4$

$y = -4x - 24$

15. (0, 5), (-1.5, 1)

y-int $= 5$

$m = \frac{5-1}{0-(-1.5)} = \frac{4}{\frac{3}{2}}$ $\quad 4 \cdot \frac{2}{3} = \frac{8}{3}$

$y = \frac{8}{3}x + 5$

16. (0, 3), (-5, ~~2.5~~) $\frac{5}{2}$

y-int $= 3$

$m = \frac{\frac{5}{2}-3}{-5-0} = \frac{-\frac{1}{2}}{-5} = -\frac{1}{2} \cdot \frac{1}{5} = -\frac{1}{10}$

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

Write a linear function *f* with the given values.

17. f(0) = 2, f(2) = 4

y-int: 2

$m = \frac{4-2}{2-0} = \frac{2}{2} = 1$

$y = x + 2$

18. f(0) = 7, f(3) = 1

y-int: 7

$m = \frac{1-7}{3-0} = \frac{-6}{3} = -2$

$y = -2x + 7$

19. f(4) = -3, f(0) = -2

y-int: -2

$m = \frac{-2+(+3)}{0-4} = \frac{1}{-4}$

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

20. f(5) = -1, f(0) = -5

y-int: -5

$m = \frac{-5+(+1)}{0-5} = \frac{-4}{-5} = \frac{4}{5}$

$y = \frac{4}{5}x - 5$

21. f(-2) = 6, f(0) = -4

y-int $= -4$

$m = \frac{-4-6}{0+(-2)} = \frac{-10}{2} = -5$

$y = -5x - 4$

22. f(0) = 3, f(-6) = 3

y-int: 3

$m = \frac{3-3}{0+(+6)} = \frac{0}{6} = 0$

$y = 0x + 3$

$y = 3$

Algebra 1 – Chapter 4
Lesson 2
Name: Key

Date _____

Write an equation in point-slope form of the line that passes through the given point and has the given slope.

1. (2, 1); m = 2

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

2. (3, 5); m = -1

$y-5=-1(x-3)$

3. (7, -4); m = -6

$y+4=-6(x-7)$

4. (-8, -2); m = 5

$y+2=5(x+8)$

5. (9, 0); m = -3

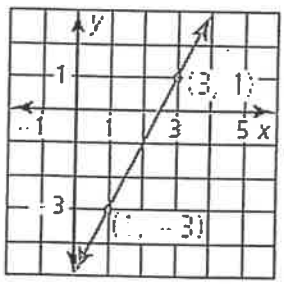
$y=-3(x-9)$

6. (0, 2); m = 4

$y-2=4x$

Write an Equation of the line in slope-intercept form.

7.



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

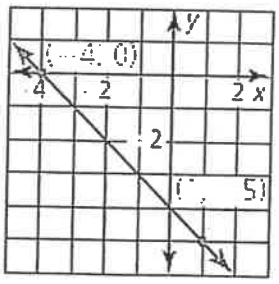
$y-1=2(x-3)$

$y-1=2x-6$

$+1 \qquad +1$

$y=2x-5$

8.

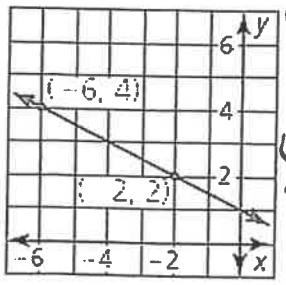


$m=\frac{0-(-5)}{-4-1}=\frac{5}{-5}=-1$

$y=-1(x+4)$

$y=-x-4$

9.



$m=\frac{4-2}{-6-(2)}=\frac{2}{-4}$

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

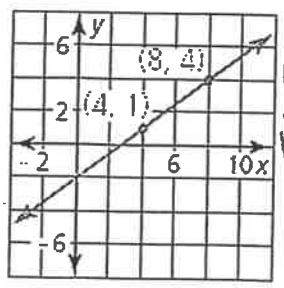
$y-4=-\frac{1}{2}(x+6)$

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

$+4 \qquad +4$

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

10.



$m=\frac{4-1}{8-4}=\frac{3}{4}$

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

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

$+1 \qquad +1$

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

Algebra 1 – Chapter 4

Lesson 2

Write an equation in slope-intercept form of the line that passes through the given points by using point-slope form first.

11. (7, 2), (2, 12)

$m = \frac{12-2}{2-7} = \frac{10}{-5} = -2$

$y-2 = -2(x-7)$

$y-2 = -2x+14$

$+2 \qquad +2$

$y = -2x+16$

12. (6, -2), (12, 1)

$m = \frac{1+(2)}{12-6} = \frac{3}{6} = \frac{1}{2}$

$y+2 = \frac{1}{2}(x-6)$

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

$-2 \qquad -2$

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

13. (6, -1), (3, -7)

$m = \frac{-7+(1)}{3-6} = \frac{-6}{-3} = 2$

$y+1 = 2(x-6)$

$y+1 = 2x-12$

$-1 \qquad -1$

$y = 2x-13$

14. (-2, 5), (-4, -5)

$m = \frac{-5-5}{-4+(2)} = \frac{-10}{-2} = 5$

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

$y-5 = 5x+10$

$+5 \qquad +5$

$y = 5x+15$

Write a linear function *f* with the given values.

17. f(2) = 2, f(1) = 1

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

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

$y-2 = x-2$

$+2 \qquad +2$

$y = x$

18. f(5) = 7; f(-2) = 0

$m = \frac{0-7}{-2-5} = \frac{-7}{-7} = 1$

$y-0 = 1(x+2)$

$y = x+2$

19. f(-10) = 4; f(-2) = 4

$m = \frac{4-4}{-2+(+10)} = \frac{0}{8} = 0$

$y-4 = 0(x+2)$

$y-4 = 0$

$+4 \qquad +4$

$y = 4$

20. f(-9) = 10, f(-1) = -2

$m = \frac{-2-10}{-1+(+9)} = \frac{-12}{8} = -\frac{3}{2}$

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

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

$-2 \qquad -2$

$y = -\frac{3}{2}x-\frac{7}{2}$

$-\frac{3}{2} \quad -\frac{4}{2}$

Algebra 1 – Chapter 4
Lesson 3
Name: _____ Date _____

Determine which of the lines, if any, are parallel.

1. Line *a* passes through (-1, -2) and (1,0)
   Line *b* passes through (4, 2) and (2, -2)
   Line *c* passes through (0, 2) and (-1, 1)

Line a
$m = \frac{0-(-2)}{1-(-1)} = \frac{2}{2} = 1$

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

Line c
$m = \frac{1-2}{-1-0} = \frac{-1}{-1} = 1$

Line a + c are parallel

2. Line *a*: 4y + x = 8
   Line *b*: 2y + x = 4
   Line *c*: 2y = -3x + 6

No Lines are parallel

Line a: $4y + x = 8$
$-x \quad -x$
$\frac{4y}{4} = \frac{-x}{4} + \frac{8}{4} \Rightarrow \boxed{y = -\frac{1}{4}x + 2}$

Line b: $2y + x = 4$
$-x \quad -x$
$\frac{2y}{2} = \frac{-x}{2} + \frac{4}{2} \Rightarrow \boxed{y = -\frac{1}{2}x + 2}$

Line c: $\frac{2y}{2} = \frac{-3x}{2} + \frac{6}{2}$
$\boxed{y = -\frac{3}{2}x + 3}$

3. Line *a*: 3y - x = 6
   Line *b*: 3y = x + 18
   Line *c*: 3y - 2x = 9

Line a: $3y - x = 6$
$+x \quad +x$
$\frac{3y}{3} = \frac{x}{3} + \frac{6}{3}$
$\boxed{y = \frac{1}{3}x + 2}$

Line b: $\frac{3y}{3} = \frac{x}{3} + \frac{18}{3}$
$\boxed{y = \frac{1}{3}x + 6}$

Line c: $3y - 2x = 9$
$+2x \quad +2x$
$\frac{3y}{3} = \frac{2x}{3} + \frac{9}{3}$
$\boxed{y = \frac{2}{3}x + 3}$

Line a + b are parallel

Write an equation of the line that passes through the given point and is parallel to the given line.

4. (1, 2); y = -5x + 4

$m = -5$
$2 = -5(1) + b$
$2 = -5 + b$
$+5 \quad +5$
$7 = b$
$\boxed{y = -5x + 7}$

5. (2, -5); 2y = 3x + 10

$\frac{2y}{2} = \frac{3x}{2} + \frac{10}{2}$
$y = \frac{3}{2}x + 5$
$m = \frac{3}{2}$

$-5 = \frac{3}{2}(2) + b$
$-5 = 3 + b$
$-3 \quad -3$
$-8 = b$
$\boxed{y = \frac{3}{2}x - 8}$

6. (-1, 3); y = 2x + 2

$m = 2$
$3 = 2(-1) + b$
$3 = -2 + b$
$+2 \quad +2$
$5 = b$
$\boxed{y = 2x + 5}$

7. (18, 2); 3y - x = -12

$3y - x = -12$
$+x \quad +x$
$\frac{3y}{3} = \frac{x}{3} - \frac{12}{3}$
$y = \frac{1}{3}x - 4$
$m = \frac{1}{3}$
$2 = \frac{1}{3}(18) + b$
$2 = 6 + b$
$-6 \quad -6$
$-4 = b$
$\boxed{y = \frac{1}{3}x - 4}$

Determine which lines, if any, are parallel or perpendicular.

8. Line *a* passes through (-2, 1) and (0, 3)
   Line *b* passes through (4, 1) and (6, 4)
   Line *c* passes through (1, 3) and (4, 1)

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

Line b
$m = \frac{4-1}{6-4} = \frac{3}{2}$

Line c
$m = \frac{1-3}{4-1} = -\frac{2}{3}$

Line b + c are perpendicular
No lines are parallel

9. Line *a*: 4x – 3y = 2
   Line *b*: $y = \frac{4}{3}x + 2$
   Line *c*: 4y + 3x = 4

Line a: $4x - 3y = 2$
$-4x \quad -4y$
$\frac{-3y}{-3} = \frac{-4x}{-3} - \frac{2}{-3}$
$\boxed{y = \frac{4}{3}x - \frac{2}{3}}$

Line b: $\boxed{y = \frac{4}{3}x + 2}$

Line c: $4y + 3x = 4$
$-3x \quad -3x$
$\frac{4y}{4} = \frac{-3x}{4} + \frac{4}{4}$
$\boxed{y = -\frac{3}{4}x + 1}$

Lines b + c → para
Lines b + c are perpendicular to c

10. Line *a*: y = 6x – 2
    Line *b*: 6x = –x
    Line *c*: y + 6x = 1

Line a: $\boxed{y = 6x - 2}$

Line b: $\frac{6x}{6} = \frac{-x}{6}$
$\boxed{y = -\frac{1}{6}x}$

Line c: $y + 6x = 1$
$-6x \quad -6x$
$\boxed{y = -6x + 1}$

None are para
Lines a + b are perpendicular

Write an equation of the line that passes through the given point and is perpendicular to the line given.

11. (7, 10); $y = \frac{1}{2}x - 9$

$m = \frac{1}{2} \rightarrow -2$
$10 = -2(7) + b$
$10 = -14 + b$
$+14 \quad +14$
$24 = b$
$\boxed{y = -2x + 24}$

12. (-4, -1); $y = \frac{4}{3}x + 6$

$m = \frac{4}{3} \rightarrow -\frac{3}{4}$
$-1 = -\frac{3}{4}(-4) + b$
$-1 = 3 + b$
$-3 \quad -3$
$-4 = b$
$\boxed{y = -\frac{3}{4}x - 4}$

13. (-3, 3); 2y = 8x – 6

$\frac{2y}{2} = \frac{8x}{2} - \frac{6}{2}$
$y = 4x - 3$
$m = 4 \rightarrow -\frac{1}{4}$
$3 = -\frac{1}{4}(-3) + b$
$3 = \frac{3}{4} + b$
$-3/4 \quad -3/4$
$\frac{12}{4} - \frac{3}{4} = \frac{9}{4}$
$\boxed{y = -\frac{1}{4}x + \frac{9}{4}}$

14. (8, 1); 2y + 4x = 12

$2y + 4x = 12$
$-4x \quad -4x$
$\frac{2y}{2} = \frac{-4x}{2} + \frac{12}{2}$
$y = -2x + 6$
$m = -2 \rightarrow \frac{1}{2}$

$1 = \frac{1}{2}(8) + b$
$1 = 4 + b$
$-4 \quad -4$
$-3 = b$
$\boxed{y = \frac{1}{2}x - 3}$

Algebra 1 – Chapter 4
Lesson 7, Day 1
Name: _____ **Date** _____

Evaluate the function.

$$f(x) = \begin{cases} 5x - 1, & \text{if } x < -2 \\ x + 3, & \text{if } x \geq -2 \end{cases} \qquad g(x) = \begin{cases} -x + 4, & \text{if } x \leq -1 \\ 3, & \text{if } -1 < x < 2 \\ 2x - 5, & \text{if } x \geq 2 \end{cases}$$

1. f(-3)

$5(-3)-1$
$-15-1$
$\boxed{-16}$

2. f(-2)

$-2+3$
$\boxed{1}$

3. f(0)

$0+3$
$\boxed{3}$

4. f(5)

$5+3$
$\boxed{8}$

5. g(-4)

$-(-4)+4$
$4+4$
$\boxed{8}$

6. g(-1)

$-(-1)+4$
$1+4$
$\boxed{5}$

7. g(0)

$\boxed{3}$

8. g(1)

$\boxed{3}$

9. g(2)

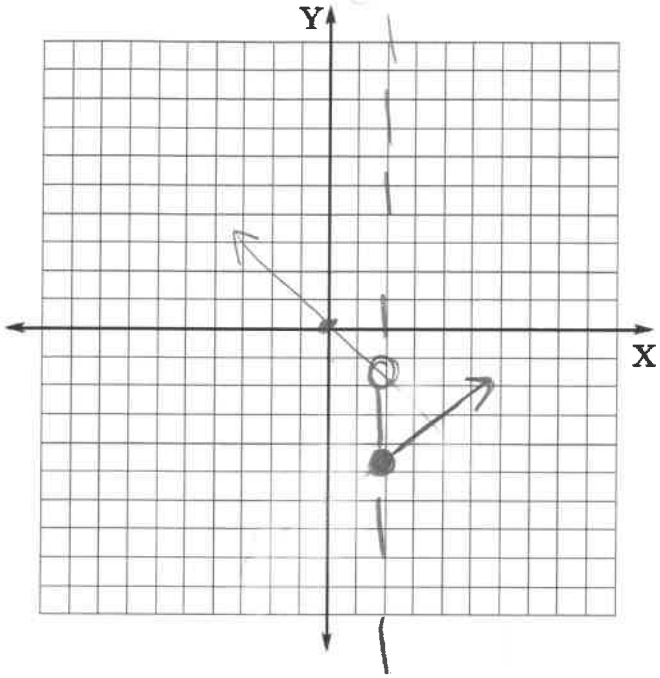
$2(2)-5$
$4-5$
$\boxed{-1}$

Algebra 1 – Chapter 4

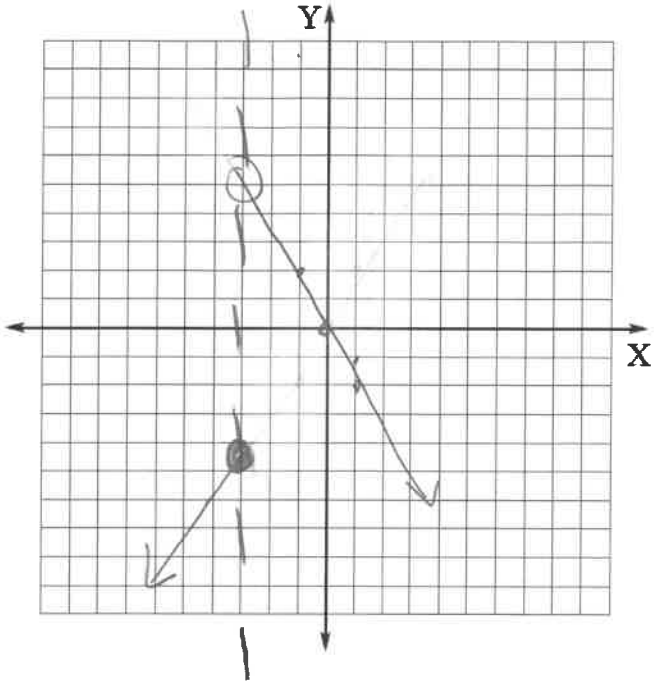
Lesson 7, Day 1

Graph the Function. Describe the domain and range.

10. $y = \begin{cases} -x, & \text{if } x < 2 \\ x - 6, & \text{if } x \geq 2 \end{cases}$



11. $y = \begin{cases} 2x, & \text{if } x \leq -3 \\ -2x, & \text{if } x > -3 \end{cases}$

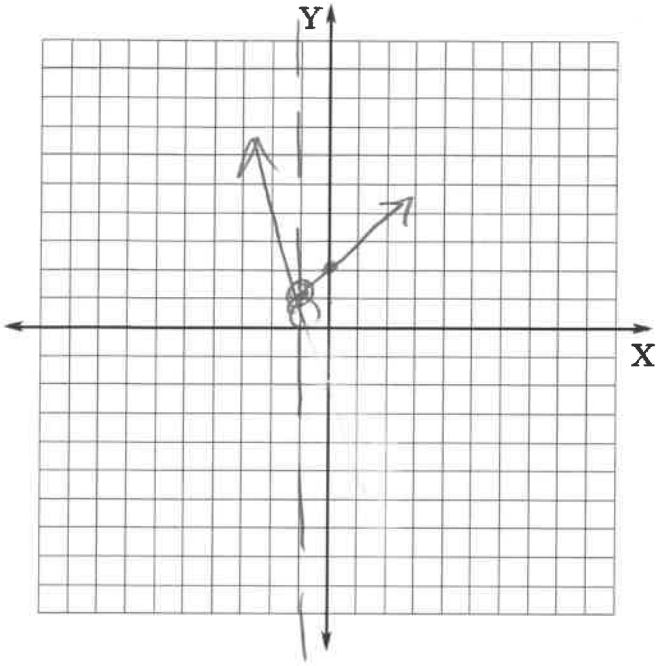


Algebra 1 – Chapter 4

Lesson 7, Day 1

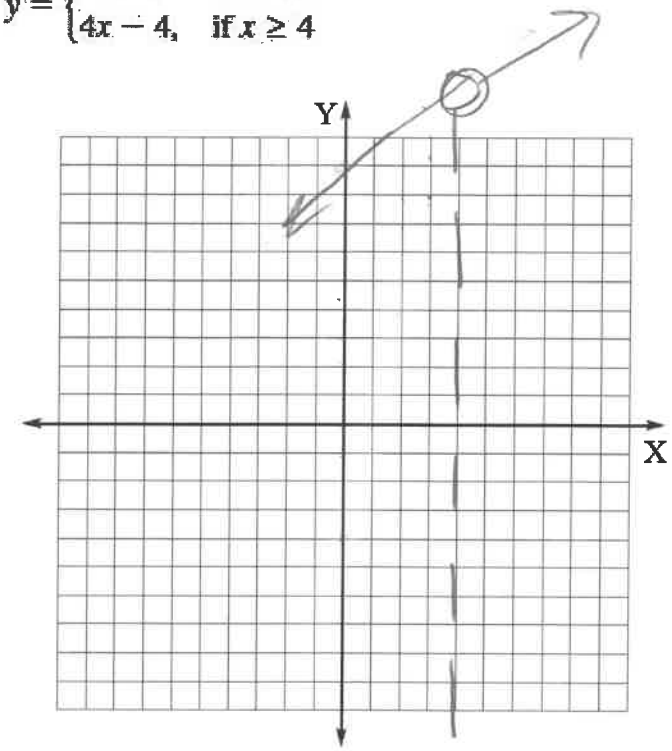
12.

$$y = \begin{cases} -3x - 2, & \text{if } x \le -1 \\ x + 2, & \text{if } x > -1 \end{cases}$$



13.

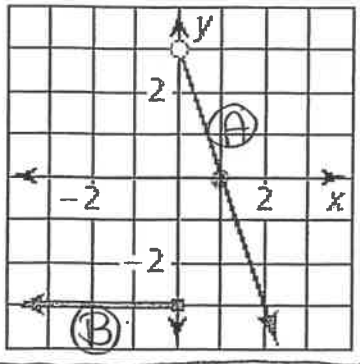
$$y = \begin{cases} x + 8, & \text{if } x < 4 \\ 4x - 4, & \text{if } x \ge 4 \end{cases}$$



Algebra 1 – Chapter 4
Lesson 7, Day 2
Name: _____ **Date** _____

Write a Piecewise Function for the graph.

1.



$x = 0$,

$A \to (0,3) + (1,0)$

$m = \frac{0-3}{1-0} = \frac{-3}{1} = -3$

y-int → 3

$y = -3x + 3$

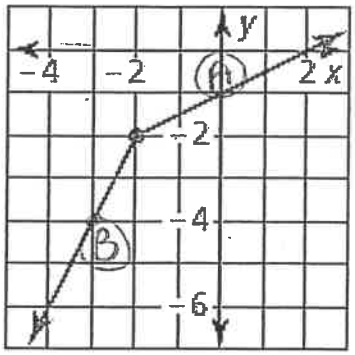
open circle to right, so >0

$B \to y = -3$

closed circle to left, so ≤ 0

$$y = \begin{cases} -3x+3, & \text{if } x > 0 \\ -3 & \text{if } x \le 0 \end{cases}$$

2.



$x = -2$

$A \to (-2,-2) + (0,-1)$

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

y-int → -1

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

closed circle @ -2 goes to right so ≥ -2

$B \to (-2,-2) + (-3,-4)$

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

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

$y + 2 = 2x + 4$

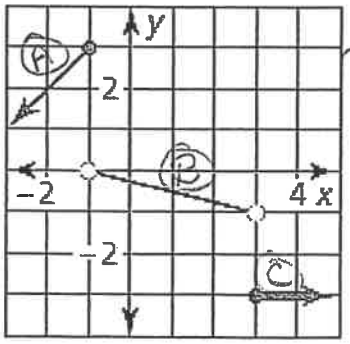
$-2 \quad -2$

$y = 2x + 2$

closed @ -2 & left so ≤ -2

$$y = \begin{cases} \frac{1}{2}x - 1, & \text{if } x \ge -2 \\ 2x+2, & \text{if } x \le -2 \end{cases}$$

3.



$x = -1$, $x = 3$

$A \to (-1,3) + (-2,2)$

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

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

$y - 3 = x + 1$

$+3 \quad +3$

$y = x + 4$

closed @ -1, goes to left, so $x \le -1$

$B \to (-1,0) + (3,-1)$

$m = \frac{-1-0}{3-(-1)} = -\frac{1}{4}$

$y - 0 = -\frac{1}{4}(x+1)$

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

closed at -1 + 3 so $-1 < x < 3$

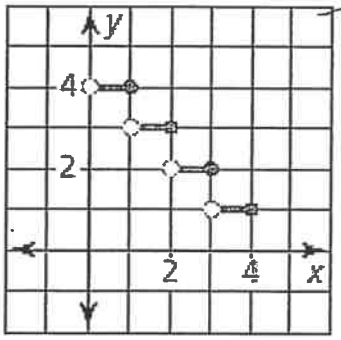
$C \to y = -3$

closed circle @ 3 goes to right

$x \ge 3$

$$y = \begin{cases} x+4, & \text{if } x \le -1 \\ -\frac{1}{4}x - \frac{1}{4}, & \text{if } -1 < x < 3 \\ -3 & \text{if } x \ge 3 \end{cases}$$

4.



$y = 4 \quad 0 < x \le 1$

$y = 3 \quad 1 < x \le 2$

$y = 2 \quad 2 < x \le 3$

$y = 1 \quad 3 < x \le 4$

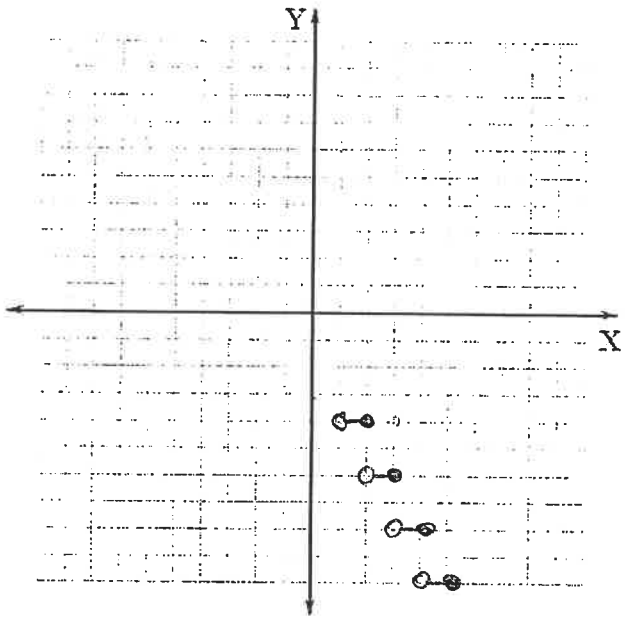
$$y = \begin{cases} 4 & \text{if } 0 < x \le 1 \\ 3 & \text{if } 1 < x \le 2 \\ 2 & \text{if } 2 < x \le 3 \\ 1 & \text{if } 3 < x \le 4 \end{cases}$$

Algebra 1 – Chapter 4
Lesson 7, Day 2

Graph the step function. Describe the domain and range.

5.

$$f(x) = \begin{cases} -4. & \text{if } 1 < x \le 2 \\ -6. & \text{if } 2 < x \le 3 \\ -8. & \text{if } 3 < x \le 4 \\ -10. & \text{if } 4 < x \le 5 \end{cases}$$



6.

$$f(x) = \begin{cases} -2. & \text{if } -6 \le x < -5 \\ -1. & \text{if } -5 \le x < -3 \\ 0. & \text{if } -3 \le x < -2 \\ 1. & \text{if } -2 \le x < 0 \end{cases}$$