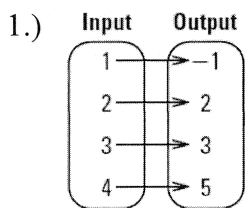


Chapter 2 Review Worksheet

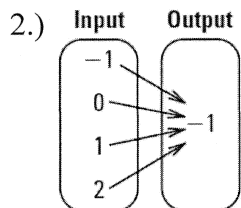
Name: Key

A.) Tell whether the relation is a function. B.) If it is a function, identify its domain and range. If it is not a function explain why it is not.



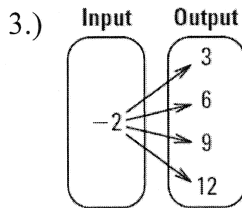
A.) function? yes

B.)
 D: $x = 1, 2, 3, 4$
 R: $y = -1, 2, 3, 5$



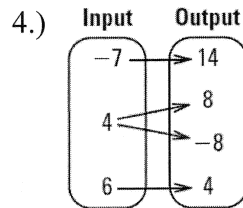
A.) function? yes

B.)
 D: $x = -1, 0, 1, 2$
 R: $y = -1$



A.) function? NO

B.) There are multiple outputs for input -2.



A.) function? NO

B.) The input of 4 has 2 different outputs

Tell whether the lines are *parallel*, *perpendicular*, or *neither*. You must have work to back your answer.

5.) Line 1: through (5, -4) and (-4, 2)
 Line 2: through (-5, -4) and (-2, -2)

Line 1: $m = \frac{2 - (-4)}{-4 - 5} = \frac{6}{-9} = \boxed{-\frac{2}{3}}$

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

Neither

6.) Line 1: through (0, -4) and (-2, 2)
 Line 2: through (4, -3) and (5, -6)

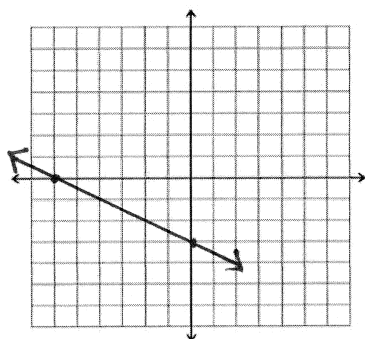
Line 1: $m = \frac{2 - (-4)}{-2 - 0} = \frac{6}{-2} = \boxed{-3}$

Line 2: $m = \frac{-6 - (-3)}{5 - 4} = \frac{-3}{1} = \boxed{-3}$

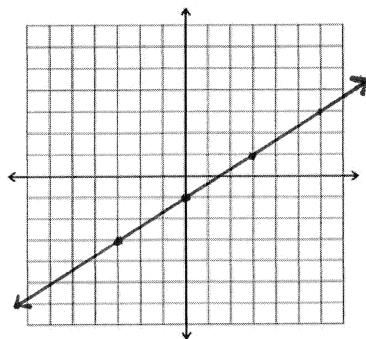
Parallel

Graph the equation using any method. Make it clear how you graphed the equation (show your x/y chart, identify your slope/y-intercept, or identify your x/y intercepts).

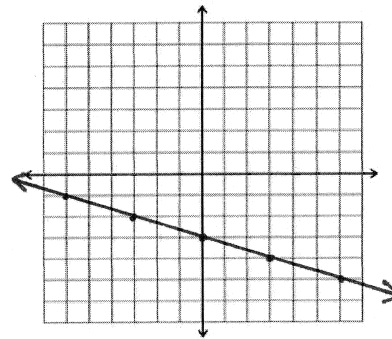
7.) $x + 2y = -6$
 x-int: (-6, 0)
 y-int: (0, -3)



8.) $\frac{2}{3}x - 1 = y$
 $m = \frac{2}{3}$, y-int: (0, -1)



9.) $-2x = 6y + 18$
 $-2x - 6y = 18$
 $y = -\frac{1}{3}x - 3$
 x-int: (-9, 0)
 y-int: (0, -3)
 $m = -\frac{1}{3}$

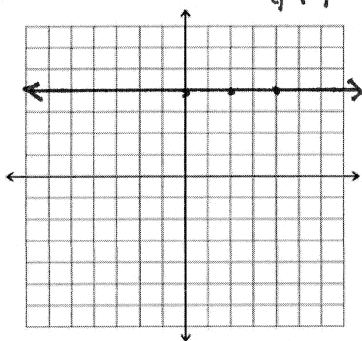


$$-3y = -12$$

$$10.) -3y + 12 = 0$$

$$y = 4$$

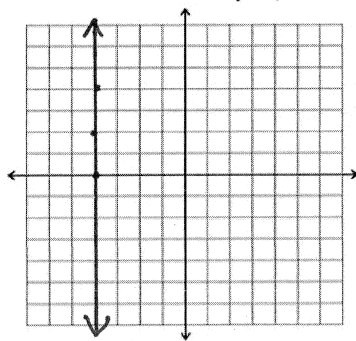
x	y
0	4
2	4
4	4



$$11.) -8 = 2x$$

$$-4 = x$$

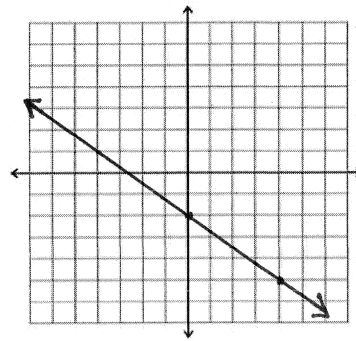
x	y
-4	0
-4	2
-4	4



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

$$12.) 3x + 4y = -8$$

$$m = -\frac{3}{4}, \text{ y-int: } (0, -2)$$



Write an equation in slope-intercept form AND standard form that passes through the given point and satisfies the given criteria, or that passes through the given points. Use integer values for A, B, and C in standard form.

$$13.) (3, 6), m = -\frac{1}{4}$$

$$y - 6 = -\frac{1}{4}(x - 3)$$

$$y - 6 = -\frac{1}{4}x + \frac{3}{4}$$

$$y = -\frac{1}{4}x + \frac{27}{4} \quad \text{S-I Form}$$

$$4y = -x + 27$$

$$x + 4y = 27 \quad \text{Standard Form}$$

$$15.) (7, -2), m = 0$$

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

$$y + 2 = 0$$

$$y = -2$$

only Form

$$16.) (-1, -3), (2, 7)$$

$$m = \frac{7 - (-3)}{2 - (-1)} = \frac{10}{3}$$

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

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

$$y = \frac{10}{3}x + \frac{1}{3} \quad \text{S-I Form}$$

$$3y = 10x + 1$$

$$-10x + 3y = 1 \quad \text{Standard Form}$$

$$17.) (4, -2); \text{ perpendicular to } y = \frac{2}{3}x - 8$$

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

$$y + 2 = -\frac{3}{2}x + 6$$

$$y = -\frac{3}{2}x + 4 \quad \text{S-I Form}$$

x2

$$2y = -3x + 8$$

$$3x + 2y = 8 \quad \text{Standard Form}$$

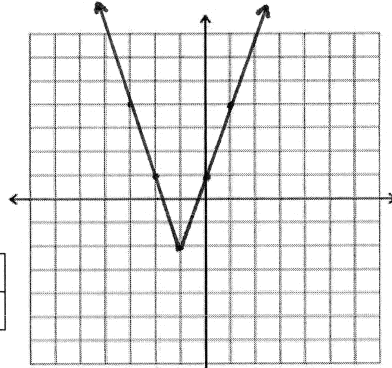
Identify the functions vertex and whether it opens up or down. Then use the table to graph the function. Compare the graph with the graph of $y = |x|$.

18.) $y = 3|x + 1| - 2$

vertex: $(-1, -2)$

opens: up

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



comparison:

- vertical stretch
- shift left 1, down 2

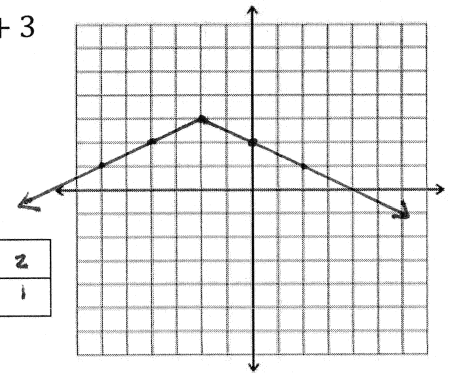
$D: (-\infty, \infty)$
 $R: [-2, \infty)$

19.) $y = -\frac{1}{2}|x + 2| + 3$

vertex: $(-2, 3)$

opens: down

x	-6	-4	-2	0	2
y	1	2	3	2	1



comparison:

- reflection over x-axis
- vertical shrink
- shift left 2, up 3

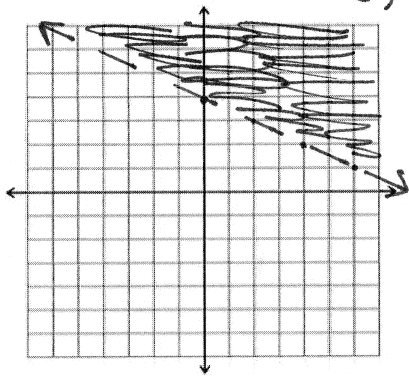
$D: (-\infty, \infty)$
 $R: (-\infty, 3]$

Graph the inequality in a coordinate plane.

20.) $x + 2y > 8$

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

$m = -\frac{1}{2}$, y-int: $(0, 4)$



Test $(0, 0)$

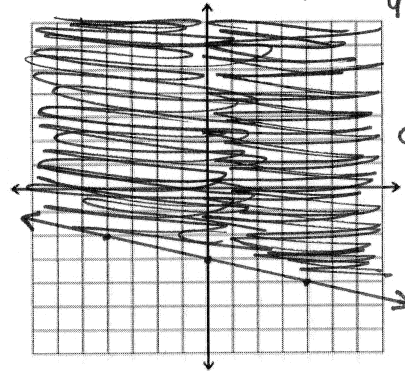
$0 + 2(0) \stackrel{?}{>} 8$

$0 > 8$ ✗ NO

21.) $-x - 4y \leq 12$

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

$m = -\frac{1}{4}$, y-int: $(0, -3)$



Test $(0, 0)$

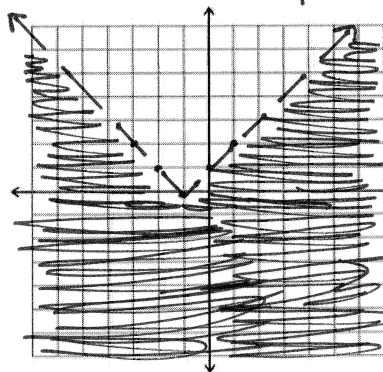
$0 - 4(0) \stackrel{?}{\leq} 12$

$0 \leq 12$ ✓

22.) $y < |x + 1|$

vertex: $(-1, 0)$

opens: up



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

Test $(0, 0)$

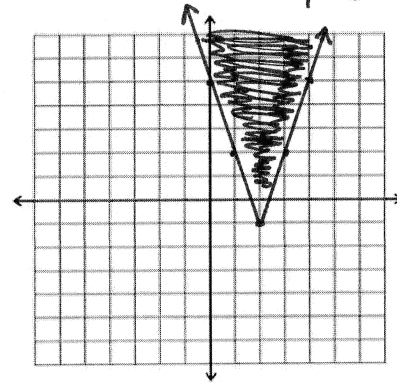
$0 \stackrel{?}{<} |0 + 1|$

$0 < 1$ ✓

23.) $y \geq 3|x - 2| - 1$

vertex: $(2, -1)$

opens: up



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

Test $(0, 0)$

$0 \geq 3|0 - 2| - 1$

$0 \geq 3 \cdot 2 - 1$

$0 \geq 5$ NO

Chapter 2 Review Worksheet

Name: Key

A delivery service charges a base price for an overnight delivery of a package plus an extra charge for each pound the package weighs. A customer is billed \$22.85 for shipping a 3-pound package and \$40 for shipping a 10-pound package.

1. Identify what you have been given (1 point, 2 points, slope, y-int.). List them below.

2 points: $(3, 22.85)$ $(10, 40)$

2. Write an equation in **slope-intercept form** that gives the total cost of shipping a package as a function of the weight of the package.

$$m = \frac{40 - 22.85}{10 - 3} = \frac{17.15}{7} = \boxed{\$2.45/\text{lb}}$$

$$y - 22.85 = 2.45(x - 3) \quad \$2.45: \text{cost per pound}$$

$$y - 22.85 = 2.45x - 7.35 \quad \$15.50: \text{base price}$$

$$\boxed{y = 2.45x + 15.50}$$

3. Find the cost of shipping a 15-pound package.

$$y = 2.45(15) + 15.50$$

$$\boxed{y = \$52.25}$$

For a school band fundraiser, students are selling seat cushions for \$4 each and license plate holders for \$6 each. One student raises \$304.

4. Write an equation in **standard form** of the line that models the possible combinations of seat cushions and license plate holders that the student sold.

$$\boxed{4c + 6p = 304}$$

$c = \#$ of seat cushions sold
 $p = \#$ of plate holders sold

5. If the student sold 19 seat cushions, how many license plate holders must they have sold?

$$4(19) + 6p = 304$$

$$\boxed{p = 38 \text{ plate holders}}$$

6. Write an equation of a line in **slope-intercept form** that is **perpendicular** to $2x + 7y = 14$ and passes through $(-4, -1)$.

$$\boxed{m = \frac{7}{2}}$$

$$y + 1 = \frac{7}{2}(x + 4)$$

$$y + 1 = \frac{7}{2}x + 14$$

$$\boxed{y = \frac{7}{2}x + 13}$$

$$\begin{aligned} \hookrightarrow 7y &= -2x + 14 \\ y &= -\frac{2}{7} + 2 \end{aligned}$$

7. Identify the domain and range of the graph.

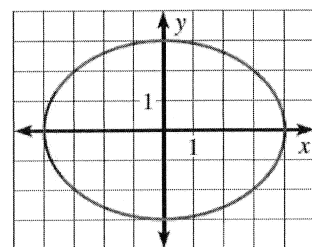
Does the graph represent a function? *Explain* how you know.

Domain: $[-4, 4]$

Range: $[-3, 3]$

Not a function.

Almost all inputs have two different outputs.



8. Without graphing, compare the graph of $y = -\frac{1}{4}|x + 9| - 5$ to the graph of $y = |x|$.

- reflection over x-axis
- vertical shrink
- vertex is $(-9, -5)$
- shift left 9, down 5

A cable company charges \$44 per month for basic service. Each premium channel costs an additional \$16 per month.

9. Write an equation in **slope-intercept form** that gives the total cost (in dollars) of cable each month as a function of the number of premium channels purchased.

$$y = 16x + 44$$

10. Identify the dependent and independent variables in this situation.

Independent: the # of premium channels purchased per month.

Dependent: the cost of the cable service.

11. Find the cost of cable service for a month in which you purchase 4 premium channels.

$$y = 16(4) + 44$$

$$\boxed{\$108}$$

During the period 1990-2004, the annual sales of a small company increased by the same amount each year. In 1997, the annual sales were \$97,000. By 2002, sales had increased to \$147,000.

12. Write a linear equation in **slope-intercept form** that models the annual sales as a function of the number of years since 1990.

$$\begin{matrix} (1997, 97,000) \\ (2002, 147,000) \end{matrix} \quad \frac{147,000 - 97,000}{2002 - 1997} = \frac{50,000}{5} = \boxed{\$10,000/\text{year}}$$

$$y - 97,000 = 10,000(x - 7)$$

$$y - 97,000 = 10,000x - 70,000$$

13. Use the model to predict the sales in 2016.

$$y = 10,000(26) + 27,000$$

$$\boxed{y = \$287,000}$$

$$\boxed{y = 10,000x + 27,000}$$

A BMX race track charges a one time membership fee and an entrance fee per race. One racer paid a total of \$76 after 3 races. Another racer paid a total of \$124 after 7 races.

14. Write an equation in **slope-intercept form** that gives the total cost, C , as a function of the number of races entered, r .

$$(3, 76) \quad (7, 124)$$

$$\frac{124 - 76}{7 - 3} = \frac{48}{4} = \boxed{\$12/\text{race}}$$

$$y - 76 = 12(x - 3)$$

$$y - 76 = 12x - 36$$

$$\boxed{y = 12x + 40}$$

15. What is the entry fee per race?

$$\boxed{\$12}$$

16. How much does the track membership cost?

$$\boxed{\$40}$$