Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Algebra Ch. 4 Subtraction in Algebra**

**Algebra 4-1: Subtraction of Real Numbers**

**Warm-Up**

1. How can we write 4 – 12 as an addition problem? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Give an example of the associative property of addition? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Subtracting Real Numbers**

We can change a subtraction expression into an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ expression by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Examples**

1. Can we use the associative property with subtraction? Explain.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Change -6 – (-y) into an addition problem.

3. Simplify -4x + 6y – 8 – (-3x) – 7y.

4. The coldest temperatures recorded in the world have been in Antarctica. Suppose a temperature of -50° C is recorded there. If then temperature then falls 30°, what is the new temperature?

**Assignment: 4-1 #’ s 2-8a, 9-19**

**Algebra 4-2: Models for Subtraction**

**Warm-Up**

**Answer the following questions. Use past notes or your book if you need to.**

1. Write 4 – 12 as an addition problem. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Can we use the Associative Property with subtraction? Support your answer with an example. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Change -6 – (-x) into an addition problem. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Simplify -4x + 6y – 8 (-3x) – 7y. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. Change from a percent to a decimal.

a. 46% = \_\_\_\_\_\_\_\_\_\_ b. 4.6% = \_\_\_\_\_\_\_\_\_\_ c. .46% = \_\_\_\_\_\_\_\_\_\_

1. Change from a decimal to a percent.

a. .15 = \_\_\_\_\_\_\_\_\_\_ b. .015 = \_\_\_\_\_\_\_\_\_\_ c. 1.50 = \_\_\_\_\_\_\_\_\_\_

**Algebra 4-2: Markups & Discounts**

|  |  |  |
| --- | --- | --- |
| **Vocab** | **Definition** | **Example** |
| **Discount** |  |  |
| **Mark-Up** |  |  |

**Key Words for Subtraction**

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 6. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 7. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 8. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 9. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 10. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**2 Methods for Finding Discounted & Marked-Up Prices**

|  |  |
| --- | --- |
| **Method 1** | **Method 2** |
| 1. **Find the amount of money the product is marked-up/discounted.**   Ex) To find 10% off of $50  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   1. **Add/Subtract that amount from the original price.**   Ex) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 1. **Start with \_\_\_\_\_\_\_\_\_\_%. Add/Subtract the percent of discount/mark-up.**   Ex) To find 10% off of $50  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   1. **Multiply the percentage by the original price.**   Ex) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

**Example Problems**

1. Jenny went to the store to buy a prom dress. Originally it costs $140. However it was on sale for 25% off. What is the sale price of the dress?

|  |  |
| --- | --- |
| **Method 1** | **Method 2** |
| **1.**  **2.** | **1.**  **2.** |

|  |  |
| --- | --- |
| **Method 1** | **Method 2** |
| **1.**  **2.** | **1.**  **2.** |

1. Taylor bought an iPod. It costs $199 without tax. If tax is 5.5%, how much did Taylor have to pay total?

**Assignment: 4-2 #’ s 1-5, 9-26, skip 15, 21**

**Algebra 4-3: Solving Sentences Involving Subtraction**

**Warm-Up**

**Explain what each phrase means.**

1. Twice \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Triples \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. More than \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Decreased \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. Name 3 other words that are “key words” or tell you to do an operation. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**A math sentence is either an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

**The phrase, “some number” means \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ so use a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

**Remember to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, if we \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ by a negative number.**

**Examples**

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. 6 – y = -20

2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. 5,000 – 30x < 1000

3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

4. The difference between 22 and six times some number is 34. What is the number?

Equation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. 12 less than 4 times a number is 68. What is the number?

Equation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Assignment: 4-3 #’ s 3-9, 11-23**

**Algebra 4-5: The Opposite of a Sum or Difference**

**Warm-Up**

Simplify.

1. -1(5) 2. -1(-3) 3. -1(y)

4. -1(-x) 5. -1(5x) + 6y 6. -1(4y) – (-1)(3y)

**Algebra 4-5: The Opposite of a Sum or Difference**

**Fill in the blank.**

If there is no number in front of a variable, then we assume it is \_\_\_\_\_\_\_\_\_\_\_.

- (b + c) = \_\_\_\_\_\_\_ + \_\_\_\_\_\_\_

- (a - c) = \_\_\_\_\_\_\_ + \_\_\_\_\_\_\_

**Examples**

Simplify.

1. –(k + 23) 2. –(6c – 5) 3. (3y + 8) – (2y – 7)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. – (4x – 13) + (-5x – 3) 5. 

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Solve and check.

6. 47z – (9 + 23z) = 3 7. -3 (y – 6) – (2y + 8) = 20

**Assignment: 4-5 #’ s 1-24, skip 22**

**Warm-Up**

**Solve. Show your steps.**

1. – (n – 9) = 11 2. 2 – (n +3) = 4

3. The dinner bill is $50 before tax and tip. Tax is 6% and tip is 15% of the original dinner cost. What is the total amount of money spent on dinner after tax and tip?

**Algebra 4-6: Graphing x + y = k and x – y = k**

|  |  |  |
| --- | --- | --- |
| **Vocab** | **Definition** | **Example** |
| **Constant** |  |  |

**Steps to Graph**

**1. Make a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

* Let \_\_\_\_\_\_\_\_ represent something.
* Let \_\_\_\_\_\_\_\_ represent something.
* Fill in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

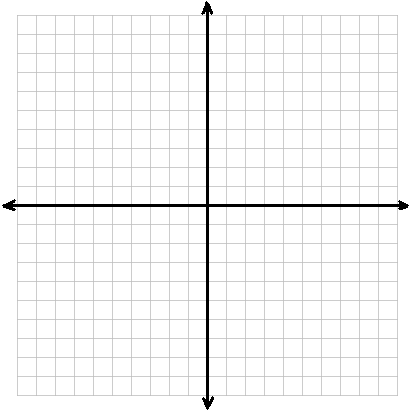
**2. Create a \_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

* Label \_\_\_\_\_ & \_\_\_\_\_ axes.
* Graph \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_ from the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Connect points only when we can \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
  + For Example \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Examples**

1. You need to buy breakfast for a dozen people. Each person will get one item. You decide to purchase donuts and bagels for the group.

There are different ways you can buy the dozen donuts and bagels. Graph the possibilities.



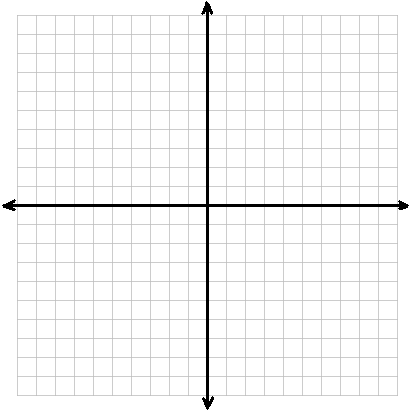
\_\_\_\_\_\_\_ = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_ = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Equation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. The difference of 2 numbers is 8.
2. Write an equation that describes this relationship. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Graph all ordered pairs of real numbers whose difference is 8.

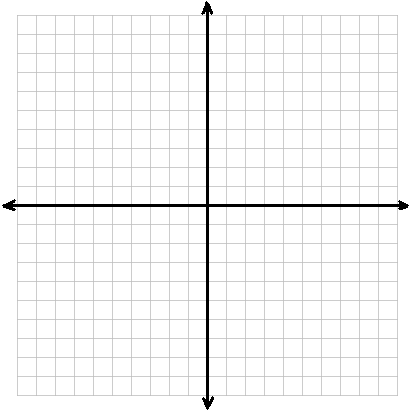
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**Assignment: 4-6 #’ s 5, 7, 9-16 3 Graphs**

**Algebra 4-7: Sum and Differences in Geometry**

**Warm-Up**



1. Graph the equation y = -x

|  |  |
| --- | --- |
|  |  |
|  |  |

**Algebra 4-7: Sums and Differences in Geometry**

|  |  |  |
| --- | --- | --- |
| **Vocab** | **Definition** | **Example** |
| **Complementary Angles** | * Form a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ * Add up to \_\_\_\_\_\_\_\_\_\_\_\_ |  |
| **Supplementary Angles** | * Form a \_\_\_\_\_\_\_\_\_\_\_\_\_\_ * Add up to \_\_\_\_\_\_\_\_\_\_\_\_ |  |

**Triangle Sum Theorem** says that all \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in a triangle add up to \_\_\_\_\_\_\_\_\_.

**Symbols**

**Triangle: \_\_\_\_\_\_\_**

**Angle: \_\_\_\_\_\_\_**

**Measure of an angle: \_\_\_\_\_\_\_\_**

**Examples**

Find x.

1.

30°

x°

2.

120°

(x + 10)°

x°

3.

(x + 30)°

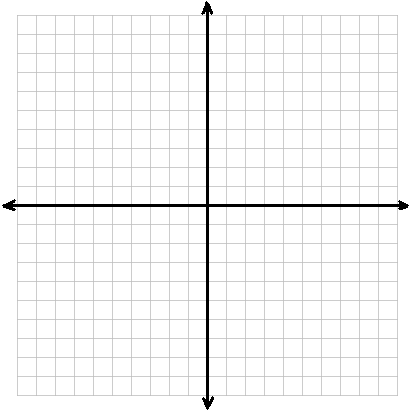
2x°

x°

**Assignment: 4-7 #’ s 1-21, 24-28, skip 6, 16**

**Algebra 4-8: The Triangle Inequality**

**Warm-Up**

1. Graph the equation x + y = 3

|  |  |
| --- | --- |
|  |  |
|  |  |

2. An angle is 54°.

a. Find the measure of the angle’s supplement. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b. Find the measure of the angle’s complement. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. Simplify. 4a – (2a + 1) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Algebra 4-8: The Triangle Inequality**

In order to form a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, the \_\_\_\_\_\_\_\_\_\_\_ of the 2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ sides must be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ than the third side.

**2 Methods- Finding possible side-lengths of a triangle**

|  |  |
| --- | --- |
| **Method 1** | **Method 2- Shortcut** |
| x is the longest side:  x is one of the shorter sides: |  |

When finding the possible lengths, write the answer as a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

For Example: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Examples**

For numbers 1 – 5, determine if the following are possible measurements for the sides of a triangle? Why or why not?

1. 1, 3, & 4 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. 3, 3, & 5 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. 4, 6 & 9 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. 1, 1, & 2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. 6, 10, & 15 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

For number 6 – 8, the lengths of 2 sides of a triangle are given. Find the possible lengths for the 3rd side.

1. 4, 8 & x \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. 12, 15, & x \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. 20, 30, & x \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. The grocery store is 7 miles from your house. Your workplace is 18 miles from your house. What are the possibilities for the distance between the grocery store and your workplace?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Diagram:

**Assignment: 4-8 #’ s 1-18, skip 4, 13, 15**

**Algebra 4-9: Graphing Linear Patterns**

**Warm-Up**

For 1-6, determine whether or not the following numbers could represent the lengths of the sides of a triangle. Show why or why not.

1. 1, 3 & 7 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. 3, 8 & 8 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. 4, 4, & 4 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. 2, 3, & 4 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. 6, 1 & 5 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6. 9, 11, & 17 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

7. An isosceles triangle has side-lengths of 7, 7, and x. What are the possible lengths of x? Write your answer as a **compound inequality**. (If you don’t know what “Isosceles” means, look it up.)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Algebra 4-9: Graphing Linear Patterns**

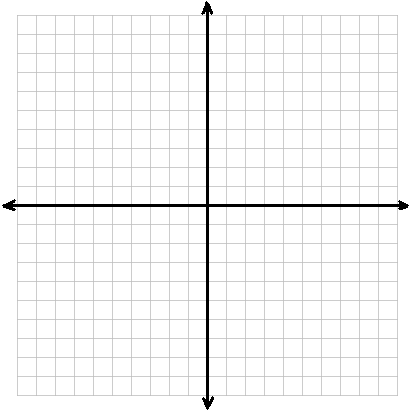
|  |  |  |
| --- | --- | --- |
| **Vocab** | **Definition** | **Example** |
| **Constant-Increase** |  |  |
| **Constant-Decrease** |  |  |
| **Linear Equation** |  |  |

What word is in the word **Linear**? (Besides “ear”) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Therefore, what do you think we are graphing today? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Examples**

Use the figure to label each line as a constant-increase, constant-decrease, or no increase or decrease.

1. Line a

b

c

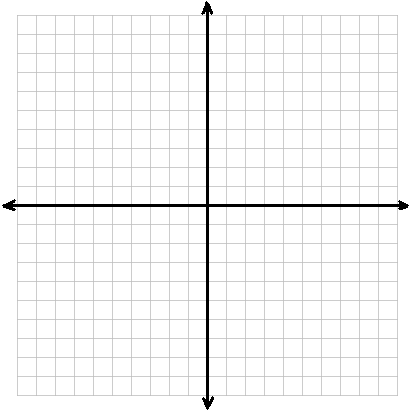
a

2. Line b

1. Line c
2. Suppose you have $15 saved from babysitting and you continue to save $5 each week. After *w* weeks, how much money will you have?
   1. If *t* represents the total amount of money you have after *w* weeks, write an **equation** involving *t* and *w*.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |
| --- | --- |
|  |  |
|  |  |

* 1. Make a table to represent your total money *t* after *w* weeks.
  2. Graph your total money *t* after *w* weeks.

1. Make a table for each equation.
   1. y = 2x b. y = -2x + 1 c. y = x - 3

**Assignment: 4-9 Wkst Rvw Day I: Ch. 4 Rvw Wkst 1 Rvw Day 2: Rvw Wkst 2**