# Remote Learning Packet

*NB: Please keep all work produced this week. Details regarding how to turn in this work will be forthcoming.*

**April 27 - May 1, 2020**

**Course**: Math Fundamentals

**Teacher(s)**: Miss Schweizer rose.schweizer@greatheartsirving.org

**Weekly Plan**:

Monday, April 27
- ☐ Study your notes
- ☐ Take the quiz

Tuesday, April 28
- ☐ Read pages 1-3
- ☐ Section 11.7 pg. 387 10-24 all

Wednesday, April 29
- ☐ Read Pages 4-6
- ☐ Section 11.7 pg. 388 25-51 odd

Thursday, April 30
- ☐ Read Pages 7-10
- ☐ Section 11.8 pg. 390 3-17 odd

Friday, May 1
- ☐ Read Pages 11-14
- ☐ Section 11.9 pg. 394 1-15 odd

## Statement of Academic Honesty

I affirm that the work completed from the packet is mine and that I completed it independently.

I affirm that, to the best of my knowledge, my child completed this work independently

_____

Student Signature

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Parent Signature

## Monday, April 27

Study your notes from the past two weeks over Chapter 11 for 20 minutes. Work through some examples, review vocabulary, look at your homework. Then complete the self-quiz for 20 minutes. You MAY use your notes for the quiz, but you may NOT use anything else or ask anyone for help. This is to see what you understand by yourself. It should not take you more than 20 minutes.
You have 2 options for taking the quiz. You can EITHER take the quiz on page 15 of the packet and show all your work on that paper, OR you can take the quiz using google classroom and upload a picture of your work. It will be easier to grade and give feedback on the quiz if you use google classroom, but I will accept either method.

## Tuesday, April 28

11.7 Solving One-Step Equations
Today we continue on our way through Chapter 11 by solving equations with negative numbers in them. The method is nothing new, but the negative numbers are! Read pages 1-3 of the packet and then complete the exercises from Section 11.7, showing all your work and correcting with a pen.

## Wednesday, April 29

11.7 Solving Multi-Step Equations
Just like yesterday, today we are focusing on solving equations with negative numbers. Read pages 4-6 of the packet and then complete the exercises from Section 11.7, showing all your work and correcting with a pen.

## Thursday, April 30

11.8 Graphs of ordered pairs
We finally get to use our graph paper today! Read pages 7-10 of the packet and Section 11.8 in the textbook. When completing the homework, please use graph paper. If you do not have graph paper, you can print some off of the internet as well. Lined paper is okay, but please use it only as a last resort. Complete the exercises from Section 11.8, showing all of your work and correcting with a pen.

## Friday, May 1

11.9 Graphs of Equation
We are working with the graphs of functions today. We will spend a few days on this, so don't worry if it seems confusing at first. Read pages 11-14 of the packet and complete the exercises from Section 11.9, showing all your work and correcting with pen. Please use graph paper.

# Answer Key

**Monday:**

It's a quiz! Do your best.

**Tuesday:**

10. 2
11. -13
12. -20
13. 0
14. 9
15. -17
16. 172
17. -50
18. -297
19. -150
20. -22
21. -99
22. 101
23. 210
24. 100

**Wednesday:**
The answers are in the back of the book.

**Thursday:**
The answers are in the back of the book.

**Friday:**
1-9 are in the back of the book. For the rest, they should all be straight lines.

# 1 Solving One-Step Equations

## 1.1 Recap

This lesson is an extension of what you already know how to do: solve an equation to find the value of the variable. Recall that you can use **transformations** to solve for the variable.

Look up the definition of a **transformation**:

Let's look at what we have done in the past:

**Ex.**

$$\frac{t}{14} = 6$$

**Transform** the equation using **inverse operations** to cancel out the division.

$$\frac{t}{14} \cdot 14 = 6 \cdot 14$$

Make sure to keep the equation equal by doing the same thing to both sides of the equation. The division and the multiplication on the left side cancel each other out, leaving:

$$t = 6 \cdot 14$$

$$t = 84$$

## 1.2 Now with Negatives

Now we are going to do the same thing, but with our expanded idea of numbers! We will still use the same process, just with negative numbers this time.

**Ex.**

$$x - (-90) = -12$$

In order to cancel out the subtraction we use the inverse operation: addition.

$$x - (-90) + (-90) = -12 + (-90)$$

Add (-90) to both sides of the equation.

$$x = -12 + (-90)$$

$$x = -102$$

Notice how the process is exactly the same. We want to isolate the variable (get the variable by itself) and use inverse operations to cancel out the other numbers. We still use the same operations and same steps, only now we are working with negative numbers.

**Ex.**

$$\frac{y}{-18} = -16$$

Use the inverse operation of multiplication to cancel the division.

$$\frac{y}{-18} \cdot -18 = -16 \cdot -18$$

The variable is isolated on the left side.

$$x = -16 \cdot -18$$

Two negatives multiply to a positive number.

$$x = 288$$

**Ex.**

$$w + 45 = 17$$

$$w + 45 - 45 = 17 - 45$$

$$w = 17 - 45$$

$$w = -28$$

**Ex.**

$$-3p = 111$$
$$\frac{-3p}{-3} = \frac{111}{-3}$$
$$p = \frac{111}{-3}$$
$$p = -37$$

# 2 Solving Multi-Step Equations

## 2.1 Review

Yesterday we worked with one-step equations that only had one operation to undo. Today we are working with multi-step equations, equations with more than one operation, just like we have done in the past.

When simplifying an equation we must always follow the **order of operations**, which we can remember using the acronym PEMDAS. Fill in what each letter stands for:

**P**
**E**
**M**
**D**
**A**
**S**

Now, if we want to solve for a variable and get the variable by itself, we need to *undo* the equation; that is we need to work backwards. So if an equation has more than one operation and we want to *undo* it, we start by undoing any subtraction, then addition, then division, and so on. Write the order in which we *undo* operations:

**S**
**A**
**D**
**M**
**E**
**P**

To refresh our memories, look at the following example.

**Ex.**

$$54 - 7x = 26$$

$$54 - 7x + 7x = 26 + 7x$$

Undo the subtraction using the inverse operation of addition

$$54 = 26 + 7x$$

$$54 - 26 = 7x + 26 - 26$$

Undo the addition

$$28 = 7x$$

$$\frac{28}{7} = \frac{7x}{7}$$

$$4 = x$$

## 2.2 Negative Numbers

This process does not change with negative numbers. We still undo the operations in the same order using the inverse operation. The only change is that now we know how to do this with negative numbers!

**Ex.**

$$-4w - (-81) = -84$$

We have two operations: multiplication by -4 and subtraction of (-81). First we undo the subtraction:

$$-4w - (-81) + (-81) = -84 + (-81)$$

$$-4w = -165$$

Next we undo the multiplication:

$$-4w \div -4 = -165 \div -4$$

$$w = \frac{-165}{-4}$$

$$w = 41.25$$

**Ex.**

$$-\frac{2}{3}y + 45 = 0$$

First undo the addition:

$$-\frac{2}{3}y + 45 - 45 = 0 - 45$$

$$-\frac{2}{3}y = -45$$

Then cancel the fraction by using the **reciprocal**:

$$-\frac{2}{3}y \times -\frac{3}{2} = -45 \times -\frac{3}{2}$$

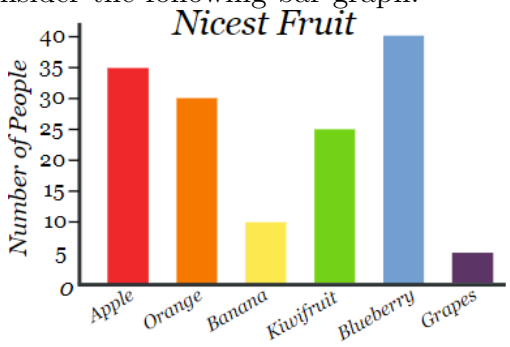
$$y = 67.5$$

All we are doing today is practicing what we already know using negative numbers. Remember the rules for multiplication and division of negative numbers as you solve for the variable.

# 3 Graphs of Ordered Pairs

## 3.1 Bar Graph

Consider the following bar graph:




If we want to find out how many people prefer oranges, what steps do we take? Well, first we look along the horizontal axis, the line along the bottom, to find oranges. Next, we look at the vertical axis, the line along the side, to find out the number of people that prefer oranges. The point (oranges, 30) gives us the information we want.

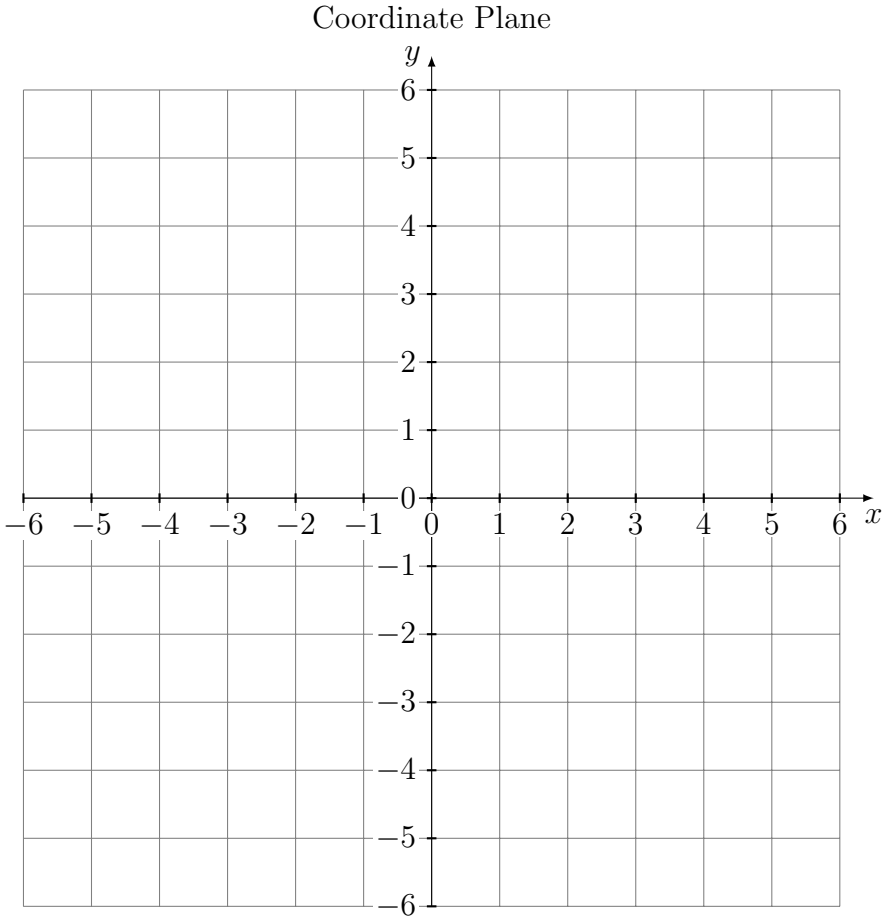
## 3.2 Coordinate Plane

This method is not just for bar graphs (or histograms) but is the same process we use to graph any point or relationship between numbers in a grid called the **coordinate plane**. Remember, in mathematics a *plane* is a flat surface that continues infinitely (think of our definition for area).

Look at the coordinate plane on the next page. The horizontal number line labelled $x$ is called the **x-axis**. The vertical number line labelled $y$ is -you guessed it- the **y-axis**. Since x comes before y in the alphabet, we ALWAYS work with the **x-axis** FIRST. We move along the horizontal line, like we did to find oranges, before moving up and down.

Since we have an infinite amount of numbers, both positive and negative, the coordinate plane can be extended in any direction infinitely. The place where the $x$ and $y$ axes meet is called the **origin**. Everything originates, or begins, at that point.

Label the following items on the coordinate plane below: **x-axis, y-axis, origin**.

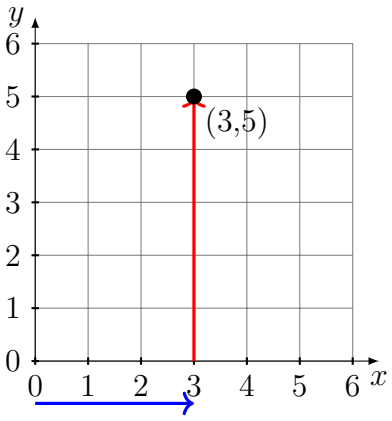



## 3.3 Ordered Pairs

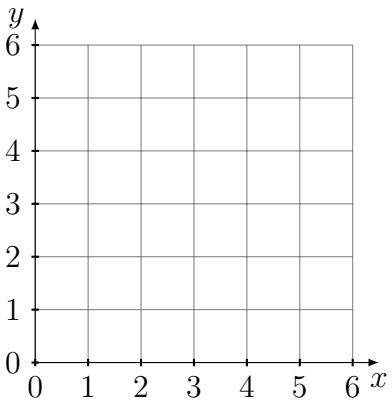
Each location, each point, on the coordinate plane has a specific name called an **ordered pair** or the **coordinates** of a point. This ordered pair is two numbers: one that tells us where it is on the x-axis and one that tells us where it is along the y-axis. It is always written as $(x, y)$ with the x-axis first.

Lets graph the point (3,5). Remember, x=3 and y=5, so we work with the x-axis FIRST.

1. First, just like before, we move along the horizontal x-axis until we find 3, the first number.
2. Next, we move along the vertical y-axis until we reach 5, the second number.




How would this point change if the coordinates were (5,3)? Draw the point (5,3) on the plane below. (The first number is always the horizontal x-axis.)

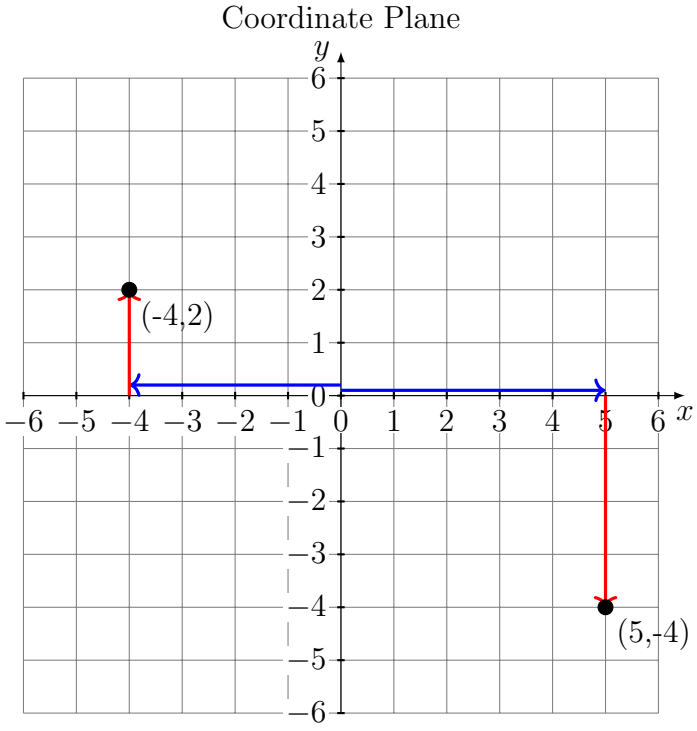


## 3.4 Graphing Negative Coordinates

Graphing negative coordinates is exactly the same as graphing positive coordinates.

1. Find the first number along the x-axis
2. Find the second number along the y-axis

**Ex.** (-4, 2); (5, -4)




What is the ordered pair for the **origin**?

Graph the following points on the coordinate plane:
(-3, 0); (-2, -3); (-1, 4)

# 4 Graphs of Equations

## 4.1 Variable Variability

We've spent a lot of time this year talking about *variables*. In the very first chapter we defined a variable as *a symbol used to represent one or more numbers* and on Wednesday we practiced solving equations with negative numbers to find the value of a specific variable. Consider the equation

$$x + 6 = 5$$

Now, we can clearly see from this equation that the variable $x$ has one value,

$$x = -1$$

What about the expression $x + 6$? In this case it is an *expression*, we do not know what it is equal to. There may be many different answers! What can we do with things we don't know? Let's call it $y$. Now we can rewrite the expression into an equation:

$$x + 6 = y$$

Instead of one specific answer, in this case $x$ represents many numbers. If we choose $x = -1$, then we can see

$$-1 + 6 = 5$$

So $y = 5$. But what if instead we choose $x = 3$? If we plug that into our equation,

$$3 + 6 = 9$$

We can see that now y=9. The value of $y$ depends on the value we choose for $x$. Both variables represent many different numbers! (How many? Infinitely many!)

Since for each value of $x$ we have exactly one value of $y$, this relationship is called a **function**.

## 4.2 Organizational Skills

Let's look at a different function:

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

We know that $x$ and $y$ represent many different values. One way to organize these values is by using a table:

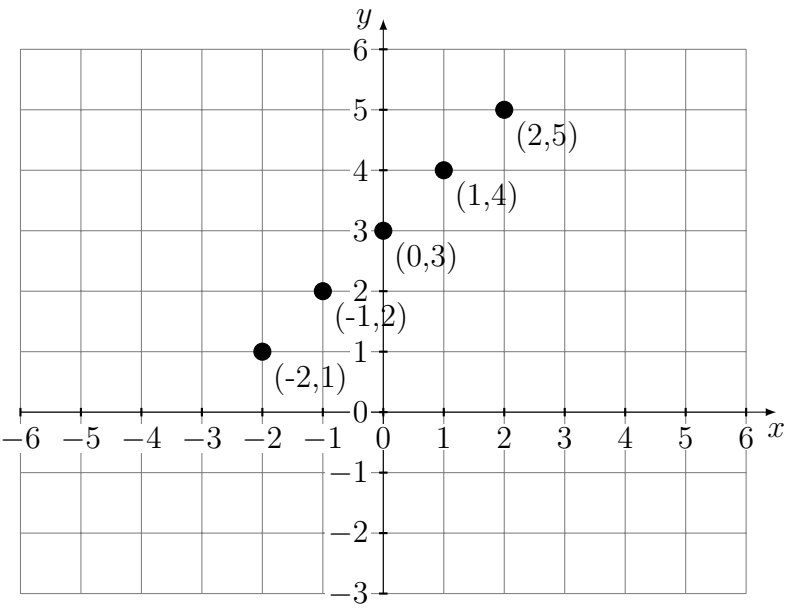
| $x$ | $x-(-3)=y$ | $y$ |
|---|---|---|
| -2 | $-2-(-3)=1$ | 1 |
| -1 | $-1-(-3)=2$ | 2 |
| 0 | $0-(-3)=3$ | 3 |
| 1 | $1-(-3)=4$ | 4 |
| 2 | $2-(-3)=5$ | 5 |

Of course, this is just a small part of the numbers we could choose. We could have chosen something like $x = 5,428$ if we wished.

Now, we have two values: $x$ and $y$. What does this remind you of? What other way can we represent the relationship between two numbers, $x$ and $y$? That's right, the **coordinate plane**! If we tweak our table slightly:

| $x$ | $x-(-3)=y$ | Ordered Pair |
|---|---|---|
| -2 | $-2-(-3)=1$ | (-2,1) |
| -1 | $-1-(-3)=2$ | (-1, 2) |
| 0 | $0-(-3)=3$ | (0, 3) |
| 1 | $1-(-3)=4$ | (1, 4) |
| 2 | $2-(-3)=5$ | (2,5) |

We can write the relationship between $x$ and $y$ as ordered pairs and graph them as follows:

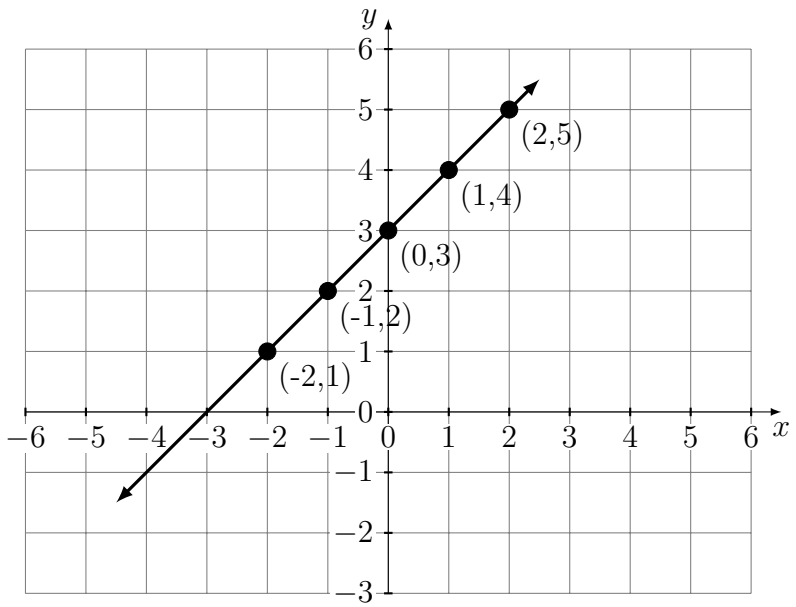



We have graphed 5 out of the infinite number of possibilities for $x$ and $y$. If we graphed the point for when $x = 0.5$, where do you think it would be on the coordinate plane?

It turns out that if we graphed *every single possibility* for $x$ and $y$, it would form a line on the coordinate plane. Every point on the line would represent a value for x and a value for y that would make our equation, $x - (-3) = y$ a true statement. (See the graph on the next page.)

Instead of having to calculate the value of $y$ every time, we can just look at the line on the coordinate plane and find out that if $x = -4$, we know $y = -1$ must be true.

$x - (-3) = y$



Name_____ Date _____

Quiz 11A – Lessons 11-1 through 11-6

1. What is the opposite of 34.2?

2. What is |-4.5|?

3. What is |87|?

4. True or false: -|-x|=|-x|

5. True or false: Some positive numbers are irrational numbers.

6. Classify 16/7 in as many ways as possible.

Simplify.

7. 37-(-45)

8. 14+(-14)

9. 39+(-8)-63

10. -15 x 14

11. -6 x -7 x 2

12. -102÷ 8

13. 80÷ -4÷ -5

14. -5 (19-27) + (-23)