NAME _____ **ALGEBRA – THE BASICS UNIT**

COHORT A

THURSDAY, SEPTEMBER 10TH – IN-PERSON DAY

- ☐ Course Contract – Sign & Return by Monday, September 14th
- ☐ You will receive *Homework Set #1*. This assignment is due on Thursday, September 17th
- ☐ Download a graphing calculator app on your phone: If you have an Android, your app is called "Wabbitemu." If you have an iPhone, your app is called "Calculate84."
- ☐ Start to purchase supplies needed for Algebra (Binder, Folder, and TI-84 Graphing Calculator if possible)
- ☐ Sign Up for Google Classroom
- ☐ Watch the Welcome Video

FRIDAY, SEPTEMBER 11TH – REMOTE DAY

- ☐ Watch the Video Lesson titled "Solving 1 & 2 Step Equations" as you complete the accompanying guided notes
- ☐ Attendance check in
- ☐ Complete **#1 thru #6** on *Homework Set #1*

SOLVING 1 & 2 STEP EQUATIONS

SOLVING EQUATIONS is like a _____.

Whatever you do to _____, you have to do

_____.

Your goal is to _____.

Solve for x:

1. $x+11=18$

2. $x-7=15$

3. $2x=18$

4. $-6x=102$

5. $-x=9$

6. $\frac{x}{5}=6$

7. $\frac{x}{7}=-2$

When solving a TWO-STEP EQUATION,

Always get rid of _____

Before you get rid of _____.

8. $3x-10=11$

9. $-4x+1=13$

10. $8-10x=78$

11. $-9x+9=24$

MONDAY, SEPTEMBER 14TH – IN-PERSON DAY

- Hand in signed Course Contract
- Lesson: "Verifying Solutions & Solving Fractional Equations"
- Complete **#7 thru #11** on *Homework Set #1*

VERIFYING SOLUTIONS & SOLVING FRACTIONAL EQUATIONS

VERIFYING SOLUTIONS:

When you solve an equation, you can verify your solution! You simply have to

_____!

1. Is $x = 10$ the solution of the equation $3x - 7 = 4x - 15$?

2. Is $x = -7$ the solution of the equation $-x + 8 = 15$?

SOLVING FRACTIONAL EQUATIONS

To get rid of a fraction directly next to a variable,

_____!!

3. $\frac{2}{3}x = 18$

4. $-\frac{1}{4}x = -6$

5. $x - \frac{2}{9} = \frac{5}{9}$

6. $\frac{x+7}{5} = 12$

7. $\frac{4}{3} = \frac{x+10}{15}$

8. $\frac{x-2}{3} + \frac{1}{6} = \frac{5}{6}$

TUESDAY, SEPTEMBER 15TH – REMOTE DAY

- Watch the Video Lesson titled "Solving Multi-Step Equations" as you complete the accompanying guided notes
- Attendance check in
- Complete **#12 thru #20** on *Homework Set #1*

SOLVING MULTI-STEP EQUATIONS

STEP 1.

STEP 2.

STEP 3.

STEP 4.

STEP 5.

Solve each equation. Then verify your solution.

1. $5(x+2)=20$

2. $2m+3m-4=-6$

3. $5x-16=14-10x$

4. $\frac{7}{3}\left(x+\frac{9}{28}\right)=20$

5. Did you know there are two ways to solve $4(x-5)=60$?

OPTION #1

$4(x-5)=60$

OPTION #2

$4(x-5)=60$

6. Solve using both options:

OPTION #1

$3(x+10)=-33$

OPTION #2

$3(x+10)=-33$

But, what about a problem like this? Can we use both options here?

7. $28r-(2r-5)=r+40$

WEDNESDAY, SEPTEMBER 16TH – REMOTE DAY

- Watch the Video Lesson titled "Parts of Expressions & Properties" as you complete the accompanying guided notes
- Complete *GCQ #1* (Google Classroom Quiz) – This will count as today's attendance!!
- Remember, *Homework Set #1* is due tomorrow (Thursday, 9/17)!!!

PARTS OF EXPRESSIONS & PROPERTIES

In the **MONOMIAL** $10x$

The **COEFFICIENT** is _____.

The **VARIABLE** is _____.

In the **BINOMIAL** $7x-3$

There are _____ **TERMS**.

The **LEAD COEFFICIENT** is _____.

The **DEGREE** is _____.

The **CONSTANT** is _____.

In the **TRINOMIAL** $4x^2-11x+8$

There are _____ **TERMS**.

The **LEAD COEFFICIENT** is _____.

The **DEGREE** is _____.

The **CONSTANT** is _____.

In the **POLYNOMIAL** $-x^6+5x^4+11x^3-7x^2-2$

There are _____ **TERMS**.

The **LEAD COEFFICIENT** is _____.

The **DEGREE** is _____.

The **CONSTANT** is _____.

PROPERTIES OF REAL NUMBERS

PROPERTY	NAME
$3+4=$ $\quad 5(6)=$ $4+3=$ $\quad 6(5)=$	
$4+0=$	
$3(1)=$	
$-10+10=$	
$\frac{3}{4}\left(\frac{4}{3}\right)=$ $\quad 2\left(\frac{1}{2}\right)=$	

PROPERTIES OF EQUALITY:

PROPERTY	NAME
Solve: $x - 8.1 = 12.7$	
Solve: $x + \frac{2}{3} = \frac{7}{3}$	
Solve: $\frac{x}{3} = -\frac{4}{9}$	
Solve: $-x = -17$	

What are **INTEGERS**?

What are **WHOLE NUMBERS**?

What are **RATIONAL NUMBERS**?

What are **IRRATIONAL NUMBERS**?

What are **REAL NUMBERS**?

What are **COMPLEX NUMBERS**?

THURSDAY, SEPTEMBER 17TH – IN-PERSON DAY

- Hand in *Homework Set #1*
- You will receive *Homework Set #2*. This assignment is due on Thursday, September 24th
- Practice Day
- Complete **#1 thru #7** on *Homework Set #2*

FRIDAY, SEPTEMBER 18TH – REMOTE DAY

- Watch the Video Lesson titled "Rational & Irrational Numbers" as you complete the accompanying guided notes
- Attendance check in
- Complete **#8 thru #9** on *Homework Set #2*

RATIONAL & IRRATIONAL NUMBERS

"TOP FIFTEEN" TOPIC

OPERATIONS WITH RATIONAL AND IRRATIONAL NUMBERS SUMMARY CHART (for nonzero rationals)
R and **R** = **R**
R and **I** = **I**
I and **I** = ?????

1. Which statement is *not* always true?

   (1) The sum of two rational numbers is rational.

   (2) The product of a nonzero rational number and an irrational number is irrational.

   (3) The sum of a rational number and an irrational number is irrational.

   (4) The product of two irrational numbers is rational.

2. State whether $7 - \sqrt{2}$ is rational or irrational. Explain your answer.

3. Determine if the product of $3\sqrt{2}$ and $8\sqrt{18}$ is rational or irrational. Explain your answer.

4. Given:

$$L = \sqrt{2}$$
$$M = 3\sqrt{3}$$
$$N = \sqrt{16}$$
$$P = \sqrt{9}$$

Which expression results in a rational number?

(1) $L + M$

(2) $M + N$

(3) $N + P$

(4) $P + L$

5. Which expression results in a rational number?

(1) $\sqrt{121} - \sqrt{21}$

(2) $\sqrt{25} \cdot \sqrt{50}$

(3) $\sqrt{36} \div \sqrt{225}$

(4) $3\sqrt{5} + 2\sqrt{5}$

6. For which value of P and W is $P + W$ a rational number?

(1) $P = \frac{1}{\sqrt{3}}$ and $W = \frac{1}{\sqrt{6}}$

(2) $P = \frac{1}{\sqrt{4}}$ and $W = \frac{1}{\sqrt{9}}$

(3) $P = \frac{1}{\sqrt{6}}$ and $W = \frac{1}{\sqrt{10}}$

(4) $P = \frac{1}{\sqrt{25}}$ and $W = \frac{1}{\sqrt{2}}$

MONDAY, SEPTEMBER 21ST – IN-PERSON DAY

- Quiz on material learned so far (Solving Equations, Parts of Expressions, Properties, Rational & Irrational Numbers)

TUESDAY, SEPTEMBER 22ND – REMOTE DAY

- Watch the Video Lesson titled "Inequalities" as you complete the accompanying guided notes
- Attendance check in
- Complete **#10 thru #12** on *Homework Set #2*

INEQUALITIES

INEQUALITY SYMBOLS:

is greater than	**is greater than or equal to**
is less than	**is less than or equal to**
is not equal to	

1. Name an integer value of x that satisfies the inequality $x > 5$.

2. Name an integer value of x that satisfies the inequality $-6 \geq x$.

3. What is the smallest integer that satisfies the inequality $x > 12$?

4. What is the smallest integer that satisfies the inequality $x \geq 12$?

5. What is the largest integer that satisfies the inequality $x < 3$?

6. What is the smallest possible integer value of x that satisfies the inequality $x > -1$?

7. Name the largest integer value of x that satisfies the inequality $x < 4$.

COMPOUND INEQUALITY:

You can split the compound inequality $4 < x < 10$ into two inequalities:

_____ and _____

Compound inequalities will always include the inequality symbols

_____ or _____.

SET BUILDER NOTATION:

INTERVAL NOTATION:

(and **)** mean

[and **]** mean

8. What is $\{x|3 < x \leq 7\}$ written in interval notation?

9. What is $\{x|2 \leq x \leq 6\}$ written in interval notation?

10. What is $\{x|-5 \leq x < -1\}$ written in interval notation?

11. What is $\{x|9 < x < 14\}$ written in interval notation?

12. If x is a number in the interval $[4,8]$, state all integers that satisfy the inequality $x \geq 6$. Explain how you determined these values.

13. If x is a number in the interval $(1,6)$, state all integers that satisfy the inequality $x < 4$. Explain how you determined these values.

WEDNESDAY, SEPTEMBER 23RD – REMOTE DAY

- Watch the Video Lesson titled "Graphing Calculator Introduction" as you complete the accompanying guided notes. PLEASE USE YOUR GRAPHING CALCULATOR OR THE APP ON YOUR PHONE AS YOU COMPLETE THESE NOTES!!
- Complete *GCQ #2* (Google Classroom Quiz) – This will count as today's attendance!
- Remember, *Homework Set #2* is due tomorrow (Thursday, 9/24)!!!

GRAPHING CALCULATOR INTRODUCTION

THE 2ND KEY:

To use anything written in _____, you must press the 2nd key first. The cursor will then have an up arrow in it.

CLEARING THE MEMORY:

Key Sequence:

The screen will say _____.

TO GET OUT OF A SCREEN:

You have two options:

_____ OR _____

CONTINUOUS OPERATIONS:

Add 6143 and 2148.
Now multiply this by 3.

*** **Ans** means _____.

THE SUBTRACTION vs. NEGATIVE BUTTONS:

The subtraction key is _____ and looks like _____.

The negative key is _____ and looks like _____.

TRY: $106-91$ $-31+162$ $-18-111$

TO TYPE IN A FRACTION:

We use _____.

TO CHANGE A FRACTION INTO A DECIMAL:

Type it in, using _____, then press _____.

For example, $\frac{3}{8}$ =_____

TRY: $\frac{16}{31}=$

$\frac{5}{2}=$

$\frac{1}{3}=$

TO CHANGE A DECIMAL INTO A FRACTION:

Type in the decimal and press _____.

For example, 0.75 = _____

TRY: 0.63 =

0.52 =

0.213 =

0.6 =

TO REDUCE A FRACTION:

Type it in, using _____, then press ENTER.

For example, $\frac{72}{180}$ reduces to _____

TRY: $\frac{4}{64}$ =

$\frac{42}{364}$ =

$\frac{81}{324}$ =

ADD, SUBTRACT, MULTIPLY, DIVIDE FRACTIONS:

Type it in, using _____, then press ENTER. Don't

forget to _____ after each fraction!

For example, $\frac{1}{3}+\frac{3}{8}$ equals _____.

TRY: $\frac{3}{16}+\frac{4}{5}=$ $\frac{2}{3}\bullet\frac{4}{9}=$

$\frac{7}{8}-\frac{1}{3}=$ $\frac{6}{7}\div\frac{1}{2}=$

THURSDAY, SEPTEMBER 24TH – IN-PERSON DAY

- Hand in *Homework Set #2*
- You will receive *Homework Set #3*. This assignment is due on Thursday, October 1st
- Lesson: "Dimensional Analysis"
- Complete **#1 thru #4** on *Homework Set #3*

DIMENSIONAL ANALYSIS

1. How many hours are there in 180 minutes?

Jeanette performed this conversion, as shown below:

$$\frac{1\,hr}{60\text{ min}}\cdot\frac{180\text{ min}}{1}=$$

2. How many inches are there in 4 yards?

Can we set up a ratio similar to Jeanette's to solve this problem?

3. Which ratio can be used to change 75 kilometers per hour to meters per minute?

(1) $\frac{75\,km}{1\,hr} \times \frac{1\,km}{1{,}000\,m} \times \frac{1\,hr}{60\,\text{min}}$

(3) $\frac{75\,km}{1\,hr} \times \frac{1{,}000\,m}{1\,km} \times \frac{1\,hr}{60\,\text{min}}$

(2) $\frac{75\,km}{1\,hr} \times \frac{1\,km}{1{,}000\,m} \times \frac{60\,\text{min}}{1\,hr}$

(4) $\frac{75\,km}{1\,hr} \times \frac{1{,}000\,m}{1\,km} \times \frac{60\,\text{min}}{1\,hr}$

4. A construction worker needs to move 120 ft^3 of dirt by using a wheelbarrow. One wheelbarrow load holds 8 ft^3 of dirt and each load takes him 10 minutes to complete. One correct way to figure out the number of hours he would need to complete this job is

(1) $\frac{120\,ft^3}{1} \times \frac{10\,\text{min}}{1\,load} \times \frac{60\,\text{min}}{1\,hr} \times \frac{1\,load}{8\,ft^3}$

(3) $\frac{120\,ft^3}{1} \times \frac{1\,load}{10\,\text{min}} \times \frac{8\,ft^3}{1\,load} \times \frac{1\,hr}{60\,\text{min}}$

(2) $\frac{120\,ft^3}{1} \times \frac{60\,\text{min}}{1\,hr} \times \frac{8\,ft^3}{10\,\text{min}} \times \frac{1}{1\,load}$

(4) $\frac{120\,ft^3}{1} \times \frac{1\,load}{8\,ft^3} \times \frac{10\,\text{min}}{1\,load} \times \frac{1\,hr}{60\,\text{min}}$

******ALWAYS <u>START</u> WITH THE UNIT YOU WANT IN YOUR ANSWER!!**

5. Joseph typed a 1,200-word essay in 25 minutes. At this rate, determine how many words he can type in 45 minutes.

6. It takes Tammy 45 minutes to ride her bike 5 miles. At this rate, how many minutes will it take her to ride 8 miles?

7. Roberta needs ribbon for a craft project. The ribbon sells for $3.75 per yard. Find the cost, in dollars, for 48 inches of the ribbon.

8. Bamboo plants can grow 91 centimeters per day. What is the approximate growth of the plant, in inches per hour?

(1) 1.49

(2) 3.79

(3) 9.63

(4) 35.83

FRIDAY, SEPTEMBER 25TH – REMOTE DAY

- Watch the Video Lesson titled "More Graphing Calculator Stuff" as you complete the accompanying guided notes. PLEASE USE YOUR GRAPHING CALCULATOR OR THE APP ON YOUR PHONE AS YOU COMPLETE THESE NOTES!!
- Attendance check in
- Complete **#5 thru #18** on *Homework Set #3*

MORE GRAPHING CALCULATOR STUFF

EXPONENTS:

To type in 41^2, press _____ or _____.

^ is called the _____.

TRY: 62^2 $(-6.4)^2$ 48^3 18^5

SQUARE ROOTS:

To type in $\sqrt{225}$, press _____.

TRY: $\sqrt{1296}$ $\sqrt{2704}$ $\sqrt{-9}$

CUBE ROOTS:

To type in $\sqrt[3]{64}$, press _____.

TRY: $\sqrt[3]{8}$ $\sqrt[3]{216}$ $\sqrt[3]{-1000}$

ABSOLUTE VALUE:

To type in $|-15|$, press _____.

TRY: $|5+2-4|$ $|4^2-13|$

THE CALCULATOR KNOWS THE ORDER OF OPERATIONS
(PEMDAS or **P**lease **E**xcuse **M**y **D**ear **A**unt **S**ally**)**
Just type it in!!

1. $5-18(7)+3^6=$

2. $84-(-3)^2+\sqrt{144}=$

BE CAREFUL when typing the following into your graphing calculator! You must remember to arrow out!!!

3. $5^3+4^8-10^4$

4. $\sqrt{64}+\sqrt{25}$

5. $\sqrt[3]{27}+\sqrt[3]{64}$

6. $|14^2-16^2|+18$

WHEN YOU HAVE "STUFF" ON THE TOP OR BOTTOM OF A FRACTION:

Type it in, using _____, then press ENTER.

7. $\frac{6+18}{12-10}=$

8. $\frac{20+12(3)}{3+4}=$

9. $\frac{120-118}{15+35}=$

10. $\frac{20^2-5^2}{360-355}=$

MONDAY, SEPTEMBER 28TH – REMOTE DAY

- Watch the Video Lesson titled "Simplifying Radicals" as you complete the accompanying guided notes.
- Attendance check in
- Complete **#19 thru #24** on *Homework Set #3*

SIMPLIFYING RADICALS

Perfect Square List:

Simplifying a Radical is _____

Express the following in simplest radical form.

1. $\sqrt{50}$

2. $\sqrt{12}$

3. $\sqrt{27}$

4. $\sqrt{75}$

5. $\sqrt{32}$

6. $\sqrt{180}$

7. $\sqrt{64}$

8. $\sqrt{98}$

9. $\sqrt{72}$

10. $\sqrt{17}$

TUESDAY, SEPTEMBER 29TH – REMOTE DAY

- Watch the Video Lesson titled "Basics Unit Study Guide" as you complete the accompanying guided notes. This is your study tool for your test on Thursday, 10/1
- Attendance check in

BASICS UNIT STUDY GUIDE

1. Simplify: $\sqrt{25}+3$

2. Simplify: $\sqrt{30+6}$

3. Which value of x satisfies the equation $3x+11x+10=24x-8$?

   (1) 1.2

   (2) 1.8

   (3) 1.6

   (4) 1.4

Solve for x:

4. $5(x+7)=-30$

5. $\frac{2}{3}(x-12)=14$

6. $\frac{x+6}{4}=\frac{1}{2}$

7. A part of Jennifer's work to solve the equation $2\left(6x^2-3\right)=11x^2-x$ is shown below.

$$Given:\ 2\left(6x^2-3\right)=11x^2-x$$

$$Step\,1:\quad 12x^2-6=11x^2-x$$

Which property justifies her first step?

(1) identity property of multiplication

(2) multiplication property of equality

(3) commutative property of multiplication

(4) distributive property of multiplication over subtraction

8. When solving the equation $4\left(3x^2+2\right)+9=8x^2+7$, Peter wrote $4\left(3x^2+2\right)=8x^2-2$ as his first step. Which property justifies Peter's first step?

(1) addition property of equality

(2) division property of equality

(3) multiplication property of equality

(4) subtraction property of equality

9. A polynomial that has a degree of 3, a lead coefficient of 9, and a constant of 4 is

(1) $3x^9+4$

(2) $9x^4-x+3$

(3) $4x^3-2x^2+9$

(4) $9x^3+2x+4$

10. Is the product of 3 and $\sqrt{5}$ rational or irrational? Explain your answer.

11. Is the difference of $\frac{4}{3}$ and $\sqrt{36}$ rational or irrational? Explain your answer.

12. Write $4 \le x < 12$ in interval notation.

Express the following in simplest radical form:

13. $\sqrt{8}$

14. $\sqrt{48}$

15. On a map, 1 centimeter represents 40 kilometers. How many centimeters are represented by 800 kilometers?

16. How many feet are there in 48 inches?

17. How many feet are there in 8 yards?

WEDNESDAY, SEPTEMBER 30TH – IN-PERSON DAY

- Practice Day
- Complete *GCQ #3* (Google Classroom Quiz)
- Remember, *Homework Set #3* is due tomorrow (Thursday, 10/1)!!!
- Remember, the Basics Unit Test is tomorrow (Thursday, 10/1)!!!!

THURSDAY, OCTOBER 1ST – IN-PERSON DAY

- Hand in *Homework Set #3*
- You will receive *Homework Set #4*. This assignment is due on Thursday, October 8th
- Basics Unit Test