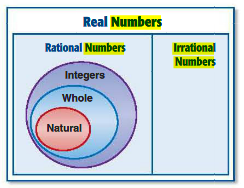
**UNIT 2 – Addition & Subtraction Rational Numbers**

Vocabulary:

**Repeating decimal**- a decimal whose digits repeat in groups of one or more.

**Terminating decimal**- a decimal whose digits end. Can be written as a fraction with a

denominator of 10, 100, 1000, etc

 **Rational numbers**- numbers that can be expressed in

the form , where *a* and *b* are integers &

integers and *b* ≠ 0

**Irrational numbers**- numbers that cannot be

expressed as terminating or repeating decimals,

or in the form , where *a* & *b* are integers &

*b* ≠ 0 (not rational)

**Real numbers**- set of all rational and irrational

Numbers

**Fraction** – part of a whole

**Numerator** – the number on the top part of a fraction; the “part” of the whole

**Denominator** - the number on the bottom of a fraction; the “whole”

**Simplify** – to express something in a form such that it cannot be made smaller/simplier/etc

**Improper Fraction** – a fraction in which the numerator is greater than the denominator

**GCF** – greatest common factor – the largest factor 2 or more numbers have in common

**Equivalent fractions** - fractions that have the same value when in SIMPLEST FORM.

*What is SIMPLEST FORM?*

* *When the GCF of the numerator and denominator is 1.*
* *When there are no more common factors between the numerator and denominator except for 1.*

**Simplifying Fractions**

1)*Look at the numerator and denominator to see what factors the two numbers will have in common.*

* *Does it have to be the largest factor? No, but it will take less steps if the largest common factor is used.*

2) *Use a common factor to divide BOTH the numerator and denominator.*

* *Divide by a common factor until the only factor that the numerator and denominator have in common is 1.*
* *(if you choose the largest, you only have to divide once)*

Example: step 1



*Factors: 1, 2, 3, 5, 6, 10, 15, 30 common factors*

*Factors: 1, 3, 5, 9, 15, 45 are circled*

step 2:

If you have a mixed number, k*eep* the whole number and simplify the fractional part as usual

*Ex.*

*Answer is the whole number plus the simplified fraction*

2  *= 2* = *2*

*Divide the num. & denom. by the GCF*

*Keep the whole number & just focus on the fractional part*

**How can I tell when two fractions are equivalent?**

* *They can be simplified to the same fraction*
* *There is a factor that BOTH the numerator and denominator of the first fraction can be multiplied by to get the other fraction.*

Examples: Simplify and

*Simplifies to same fraction, therefore they are equivalent*



*Multiplied both numerator & denominator by 9 AND got the fraction as an answer therefore they are equivalent.*

Multiply and



**Adding/Subtracting Fractions**  (don’t forget to use integer rules if you have negatives)

When denominators are the *same*

1. Add or subtract the numerators
2. Put sum or difference “over” the denominator
3. Simplify

Examples:

1) + = = 2 2) – = + =

When denominators are *different*

* 1. Find the lowest common denominator (LCD)\*
  2. Rewrite each fraction as its *equivalent fraction* using the LCD
  3. Add or subtract the numerators
  4. Put sum or difference “over” the common denominator

1. Simplify

\*to find the LCD

- look at the largest denominator

- ask yourself if the other denominator(s) will “go into” that denominator evenly

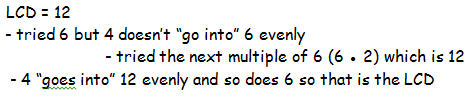
- if yes, that number is your common denominator

- if no, find the next multiple of that denominator and ask yourself the same

question- continue trying multiples until your answer is yes

Examples:

1) + LCD = 8 2) –



+ = = 4¼

+ =

**Adding & Subtracting Decimals** (don’t forget to use integer rules if you have negatives)

To add or subtract decimals:

1. line up the decimal points (this will automatically line up your place values)
2. add or subtract as usual.

Ex. 2**.**4 + 3**.**1 6**.**78 – **.**345

2**.**4 6**.**78*0 (put in the 0 placeholder)*

+ 3**.**1 - **.**345

5.1 6**.**435

**Converting Fractions to Decimals**

**Method 1:**

* *Write an* ***equivalent fraction*** *using a denominator that’s a* ***multiple of 10***
* Change the equivalent fraction into a decimal

**=** *= .8*

**Method 2:**

We use **LONG DIVISION**

* Divide the numerator (dividend) by the denominator (divisor)

8

**=**

-40



0

Therefore, is equivalent to **.**8

**Converting decimals to fractions**

* Determine the place value of the last digit in the decimal
* Write the decimal (without decimal point) in numerator
* Write place value in denominator

*WRITE IT THE WAY YOU SAY IT*

*SIMPLIFY*

* Simplify

Ex 0.485 = =