**EnVision Math – Topic 9**

FRACTION

HANDBOOK

**NOTICE:** Please use at ALL times… when fractions just don’t make any sense.

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

**Finding Equivalent Fractions**

* When you are finding an equivalent fraction…you are finding fractions that are equal to each other or that have the same value.
* **Equivalent = Equal or “the same as”**

**There are two rules for finding equivalent fractions:**

1. **MULTIPLY** the ***denominator*** and the ***numerator*** by the **SAME** number.

$\frac{2x2}{3x2}$ = $\frac{4}{6}$ ( $\frac{2}{3}$ is equivalent or equal to $\frac{4}{6}$ )

*OR*

1. **DIVIDE** the ***denominator*** and the ***numerator*** by the **SAME** number.

$\frac{6÷3}{9÷3}$ = $\frac{2}{3}$ ( $\frac{6}{9}$ is equivalent or equal to $\frac{2}{3}$ )

**To REDUCE or SIMPLIFY a Proper Fraction**

* Also known as: *reduce, lowest terms, simplest form*

**METHOD #1**: Dividing by the Greatest Common Factor (GCF)

**Begin by listing the factors** to find the largest factor shared by both the numerator and denominator. Make a ***factor rainbow*** for the numerator and denominator.

$ \frac{16}{24}$ ***Factors of 16 are***: ***1, 2, 4, , 16***

 ***Factors of 24 are: 1, 2, 3, 4, 6, , 12, 24***

1. is the ***GREATEST*** factor on both lists. To reduce the

 fraction, ***DIVIDE*** the ***numerator*** and ***denominator*** by 8.

$$\frac{2}{3}$$

 $\frac{16÷8}{24÷8}$ =

**Estimating Sums and Differences of Fractions**

Determine if a fraction is closest to 0, $\frac{1}{2}$, or 1

* When the numerator is small compared to the denominator, the benchmark we use is **0.**
	+ example: $\frac{1}{8}$ = 0
* When numerator is about half of the denominator, we will be using the benchmark $\frac{1}{2}$.
	+ example: $\frac{5}{9}$ = $\frac{1}{2}$
* When the numerator and denominator are very close, we

use the benchmark **1 whole**.

* example: $\frac{5}{6}$ = 1 whole

Let’s take our benchmarks a little further, by

using them to estimate sums and differences.

Estimate $\frac{7}{12}$ + $\frac{4}{5}$

**Step 1:** First, replace each fraction with a benchmark.

$\frac{7}{12}$ = $\frac{1}{2}$ and $\frac{4}{5}$ = 1

**Step 2:** Then add the benchmarks

**1**$\frac{1}{2}$

$\frac{1}{2}$ + 1 =

**Finding the Least Common Multiple**

**Mutliples:** are your basic multiple facts for a particular number. Ex: the multiples of 5 are 5, 10, 15, 20, 25, 30….the multiples of 3 are 3, 6, 9, 12, 15….

**Common Multiple:** is a number that is a multiple of two or more numbers.

**Least Common Multiple:** is the least or smallest number that is a multiple of both numbers.

Find the Least Common Multiple of 4 and 6.

1. **Begin by listing the multiples or basic multiplication facts** of each number to find the smallest number that they both have in common.

 **Multiples of 4:** 4, 8, , 16, 20, 24, 28, 32, 36

**Multiples of 6:** 6, , 18, 24, 30, 36, 42, 48

**12**

**The Least Common Multiple of 4 and 6 is**

**Finding a Common Denominator**

 **There are TWO ways to find a common denominator**

1.List the ***MULTIPLES*** of each denominator until you find the **LOWEST COMMON DENOMINATOR (LCD)**.

 $\frac{1}{4}$ 4, 8, **12**, 16, 24

 and

 $\frac{2}{6}$ 6, **12** , 18, 24

***OR***

2. ***MULTIPLY*** the ***TWO*** denominators together.

 $\frac{1}{4}$ and $\frac{2}{6}$

 4 \* 6 = 24

**Addition of Fractions with Unlike Denominators**

**1**. Find the **LOWEST COMMON DENOMINATOR (LCD)** between the two denominators by ***listing the multiples of each denominator***.

 $\frac{1}{4}$ 4, 8, , 12, , , 16

 + $\frac{2}{6}$ 6, 12 , 18, 24

**2**. **RENAME (or CHANGE) EACH FRACTION** using the ***Lowest Common Denominator***

\*remember…what ever you do to the denominator you have to do to the numerator

 $\frac{1\*3}{4\*3}$ = $\frac{3}{12}$

 + $\frac{2\*2}{6\*2}$ = $\frac{4}{12}$

**3**. Now that the fractions have a common denominator you need to **ADD THE NUMERATORS** and then **KEEP THE DENOMINATOR THE SAME**.

 $\frac{3}{12}$

 + $\frac{4}{12}$

$$\frac{7}{12}$$

**Subtraction of Fractions with Unlike Denominators**

**1**. Find the **LOWEST COMMON DENOMINATOR (LCD)** between the two denominators by ***listing the multiples of each denominator***.

 $\frac{2}{4}$ 4, 8, , 12, , , 16

 - $\frac{2}{6}$ 6, 12 , 18, 24

**2**. **RENAME EACH FRACTION** using the ***Lowest Common Denominator***

\*remember…what ever you do to the denominator you have to do to the numerator.

 $\frac{2\*3}{4\*3}$ = $\frac{6}{12}$

 - $\frac{2\*2}{6\*2}$ = $\frac{4}{12}$

**3**. Now that the fractions have a common denominator you need to **SUBTRACT THE NUMERATORS** and then **KEEP THE DENOMINATOR THE SAME**.

 $\frac{6}{12}$

 - $\frac{4}{12}$

$\frac{2}{12}$ or $\frac{1}{6}$