**EnVision Math – Topic 11**

FRACTION

HANDBOOK

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

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

**Fraction of Fraction Problems**

 **HINT!! “OF” in math = MULTIPLY**

1. **What is** $\frac{1}{2}$ **of 3? (HINT!! put the whole number over 1)**

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

$\frac{1}{2}$ \* $\frac{3}{1}$ = $\frac{3}{2}$ change to a ***mixed number***

1. **What is** $\frac{1}{4}$ **of** $\frac{1}{2}$ **?**

$$\frac{1}{8}$$

$\frac{1}{4}$ \* $\frac{1}{2}$ =

1. **What is** $\frac{2}{3}$ **of 12?**

8

$\frac{2}{3}$ \* $\frac{12}{1}$ = $\frac{24}{3}$ change to a ***mixed numbe***r or a ***whole number***

**Multiplying Fractions and Whole Numbers**

1. Put the ***Whole Number over 1***.

$\frac{1}{4}$ \* 3 becomes $\frac{1}{4}$ \* $\frac{3}{1}$

2. ***MULTIPLY*** the ***NUMERATORS***.

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

3. ***MULTIPLY*** the ***DENOMINATORS***.

$$\frac{3}{4}$$

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

\* If your answer is an improper fraction…please change into a mixed number!!

**Fraction of Whole Number Problems**

 **Cross - Divide…then Multiply**

1. ***DIVIDE*** the ***whole number*** of the fraction by the ***denominator***.

$\frac{2}{3}$ of 21

 $÷$

 21 ÷ 3 = 7

1. Then ***MULTIPLY*** the answer (from step 1) by the ***numerator*** of the fraction.

 $×$ $\frac{2}{3}$ of 21

14

 7 × 2 =

**Fraction of Whole Number Problems**

 To find a ***PART…***

Example: If 21 counters are the whole set, how many is $\frac{2}{3}$ of the set?

$× \frac{2}{3}$ of 21 = 14

 $ ÷$

 To find a ***WHOLE…***

Example: If 9 counters are $\frac{3}{7}$ of the set, how many counters are in the whole set?

 $ ÷$

$× \frac{3}{7}$ of 9 = 21

**Estimating Products of Fractions**

Estimate: **3 x** $6\frac{4}{5}$

***Remember***… When the fractional part is **greater than or equal to** $\frac{1}{2}$ you round the whole number up…**less than** $\frac{1}{2}$keep it the same.

* $6\frac{4}{5}$ = greater than $\frac{1}{2}$ so you would round the 6 to **7** wholes

 21

* 3 x 7 =

Estimate: $\frac{3}{4}$ x **19**

We need to use compatible numbers here…for the ***whole number*** and the ***denominator*** of the fraction.

* For 19…the nearest multiple of 4 is 20
* Rewrite the problem as: $\frac{3}{4}$ x **20**

$× \frac{3}{4}$ of 20 = 15

 $÷$

15

 20 ÷ 4 = 5 and 5 x 3 =

**Multiplying Fractions**

**FINALLY! Believe it or not…multiplying fractions is EASY**

1. ***Multiply*** **BOTH** ***Numerators***.

$\frac{2}{5}$ \* $\frac{3}{4}$ = $\frac{6}{?}$

1. ***Multiply*** **BOTH** ***Denominators***.

$\frac{2}{5}$ \* $\frac{3}{4}$ = $\frac{6}{20}$

$\frac{6}{20}$ or $\frac{3}{10}$

**Multiplying Mixed Numbers**

1. Begin by changing the ***MIXED NUMBERS*** into ***IMPROPER FRACTIONS***.

$2\frac{1}{3}$ \* $2\frac{1}{2}$ becomes $\frac{7}{3}$ \* $\frac{5}{2}$

 2. ***MULTIPLY*** the ***NUMERATORS.***

$\frac{7}{3}$ \* $\frac{5}{2}$ = $\frac{35}{?}$

 3. ***MULTIPLY*** the ***DENOMINATORS***.

$\frac{7}{3}$ \* $\frac{5}{2}$ = $\frac{35}{6}$

 4. Changethe ***IMPROPER FRACTION*** into a ***MIXED NUMBER***.

$$5\frac{5}{6}$$

 $\frac{35}{6}$ becomes

**Dividing Fractions**

\* If you start with the fractions:

$\frac{3}{4}$$÷$$\frac{1}{8}$

1. Begin by taking the ***second fraction*** and ***FLIP*** (fancy word is you’re finding the ***reciprocal*** of the fraction) it.

$\frac{3}{4}$$÷$$\frac{8}{1}$

1. Once the second fraction is flipped, it now becomes a ***MULTIPLICATION problem***…follow the rules for multiplying fractions.

$\frac{3}{4}$$\*$$\frac{8}{1}$ **=** $\frac{24}{4}$

1. Change the improper fraction into a ***MIXED NUMBER*** or a ***WHOLE NUMBER***.

6

 $\frac{24}{4}$ =