**UNIT 2: Fractions**

*TOPICS:*

* *Review A – Equivalent Fractions + Lowest Terms*
* *Review B – Improper/ Mixed Numbers*
* *Review C – Fractions as Percentages + Decimals*
* *2.1 Comparing Fractions*
* *2.3 Adding Fractions with Fraction Strips*
* *2.4 Subtracting Fractions with Fraction Strips*
* *2.7 Adding and Subtracting Fractions with Number Lines*
* *2.9 Adding and Subtracting Fractions*
* *2.10 Adding and Subtracting Mixed Numbers*

**Review A – Equivalent Fractions + Lowest Terms**

**Equivalent** – Means equal. In math, this is represented with an equal sign (=).

Johnny has 5 candies and is given 3 more. He then splits all his candies with his friend. How many does each person get?

5 + 3 = 8 ÷ 2 = 4 candies each 🡪 This is an incorrect math statement.

 5 + 3 is not equal to 4.

Instead write 5 + 3 = 8, then 8 ÷ 2 = 4 candies each or (5 + 3) ÷ 2 = 4

**Equivalent Fractions** – Two fractions that have the same value. The ratios of numerator to denominator is the same.

$\frac{1}{2}=\frac{4}{8}$ 🡪 1 ÷ 2 = 0.5 and 4 ÷ 8 = 0.5 *Numerator – top of fraction*

 *Denominator – bottom of fraction*

Ex. 1) Write 3 equivalent fractions for $\frac{3}{5}$

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Ex. 2) Find the missing number.

1. $\frac{3}{4}= \frac{12}{N}$ b.) $2\frac{4}{N}=2\frac{12}{18}$ c.) $\frac{N}{8}= \frac{50}{80}$

**Lowest Terms** – The form of a fraction in which the numerator and denominator have no common factor other than 1.

Ex. 3) Which are the following are in lowest terms?

1. $\frac{2}{4}$ b.) $\frac{4}{11}$ c.) $\frac{9}{12}$ d.) $3\frac{13}{17}$

Ex. 4) Write each fraction in lowest terms.

1. $\frac{12}{15}$ = b.) $\frac{38}{42 }$ = c.) $2\frac{12}{21}= $ d.) $1\frac{3}{24}= $

ASSIGNMENT: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Review B – Improper/ Mixed Numbers**

**Proper Fraction** – The numerator is smaller than the denominator. The fraction has a value less than 1.

**Improper Fraction** – The numerator is larger than the denominator. The fraction has a value greater than 1.

**Whole Number** – The numerator is a whole number multiple of the denominator.

**Mixed Number** – A mix of a whole number and proper fraction.

Ex. 1) Indicate if the following numbers are proper fractions, improper fractions, whole numbers, or mixed numbers.

1. $\frac{4}{5}$ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ b.) $\frac{24}{6} \\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_$ c.) 2$\frac{1}{5} \\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_$

d.) 3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ e.) $\frac{13}{6} \\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_$

**Improper Fractions 🡪 Mixed Numbers**

Ex. 2) $\frac{13}{5}$ means 13 ÷ 5 13 ÷ 5 = 2 R3 🡪 $2\frac{3}{5}$

Ex. 3) $\frac{21}{6}$ means 21 ÷ 6 21 ÷ 6 = 3 R3 🡪 $3\frac{3}{6}$ = $3\frac{1}{2}$ (lowest terms)

Ex. 4) Write each improper fraction as a mixed number in lowest terms.

1. $\frac{31}{9}= \\_\\_\\_\\_\\_\\_$ b.) $\frac{23}{4}= \\_\\_\\_\\_\\_\\_$ c.). $\frac{37}{8}= \\_\\_\\_\\_\\_\\_$

**Mixed Numbers 🡪 Improper Fractions**

Ex. 5) $2\frac{4}{5}$ 2 wholes are the same as $\frac{10}{5}$ (THINK 2 x 5 = 10) $\frac{10}{5}+ \frac{4}{5}= \frac{14}{5}$

Ex. 6) Write each mixed number as an improper fraction in lowest terms.

1. $2\frac{3}{7}= \\_\\_\\_\\_\\_\\_$ b.) $3\frac{5}{6}= \\_\\_\\_\\_\\_\\_$ c.). $1\frac{7}{8}= \\_\\_\\_\\_\\_\\_$

ASSIGNMENT: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Review C –** **Fractions as Percentages + Decimals**



**Fractions 🡪 Decimals**

Ex. 1) Write the following as a decimal.

1. $\frac{5}{10}= $ b.) $\frac{7}{100}= $ c.) $\frac{3}{1000}= $

d.) $\frac{15}{100}= $ e.) $\frac{98}{1000}= $ f.) $\frac{15}{10}=$

Ex. 2) Write the following as a decimal.

1. $2\frac{3}{10}= $ b.) $1\frac{31}{100}$ = c.) $3\frac{17}{1000}=$

Ex. 3) Convert to a fraction over 10, 100, 1000 then write as a decimal.

1. $\frac{27}{50}= $ b.) $1\frac{4}{5}=$ c.) $5\frac{17}{20}=$

Ex. 4) Divide the numerator by the denominator to find the decimal value.

1. $\frac{8}{16}=$ b.) $\frac{3}{8}= $

**Fractions 🡪 Percentage *Remember:***

 ***% means ÷ 100***

Ex. 5) Write the following fractions as a percentage.

1. $\frac{5}{20}= \frac{}{100}= \\_\\_\\_\\_\\_\\_\\_\%$ b.) $\frac{17}{50}= \frac{}{100}= \\_\\_\\_\\_\\_\\_\\_\%$

c.) $ \frac{11}{25}= \frac{}{100}= \\_\\_\\_\\_\\_\\_\\_\%$ d.) $\frac{17}{10}= \frac{}{100}= \\_\\_\\_\\_\\_\\_\\_\%$

ASSIGNMENT: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**2.1 Comparing Fractions**

**Symbols**:

> 🡪 greater than < 🡪 Less than = 🡪 equal to

**Strategies:**

Ex.1) Find a common denominator using LCM to compare.

1. $\frac{3}{4}\left[ \right]\frac{5}{6}$ b.) $\frac{1}{5}\left[ \right] \frac{2}{9}$ c.) $\frac{5}{8}\left[ \right] \frac{4}{7}$

Ex. 2) Write each fraction by drawing on a number line.

 a.) $1\frac{1}{4}, \frac{2}{3}, and \frac{3}{2} $

 b.) $2\frac{1}{2}, \frac{5}{3}, and \frac{7}{4} $

Ex.1) Find a common numerator to compare.

1. $\frac{2}{9}\left[ \right]\frac{1}{6}$ b.) $\frac{3}{11}\left[ \right] \frac{6}{19}$ c.) $\frac{8}{11}\left[ \right] \frac{4}{5}$

ASSIGNMENT: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**2.3 Adding Fractions with Fraction Strips**

Ex. 1) Estimate the following sums using fraction strips.

 a.) $\frac{1}{3}+ \frac{1}{4}$ = b.) $\frac{4}{5}+ \frac{3}{4}$ = c.) $\frac{5}{2}+ \frac{7}{8}$ =

Ex. 2) Add each of the following using fraction strips.

 a.) $\frac{2}{3}+ \frac{1}{4}=$ b.) $\frac{5}{6}+ \frac{1}{3}$ = c.) $\frac{5}{6}+ \frac{1}{2}$ =

ASSIGNMENT: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**2.4 Subtracting Fractions with Fraction Strips**

Ex. 1) Estimate the following sums using fraction strips.

 a.) $\frac{2}{3}- \frac{1}{4}$ = b.) $\frac{7}{12}- \frac{3}{4}$ = c.) $\frac{5}{3}- \frac{7}{6}$ =

Ex. 2) Subtract each of the following using fraction strips.

 a.) $\frac{2}{3}- \frac{1}{4}= $ b.) $\frac{3}{5}- \frac{1}{2}$ = c.) $\frac{5}{6}- \frac{1}{3}$ =

ASSIGNMENT: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**2.7 Adding and Subtracting Fractions with Number Lines**

Ex. 1) Plot the following equations on the number line, then evaluate.

1. $\frac{1}{2}+\frac{1}{8}=$ b.) $\frac{7}{12}+\frac{1}{4}=$ c.) $\frac{3}{2}+\frac{1}{3}=$

(a)

(b)

(c)

Ex. 2) Plot the following equations on the number line, then evaluate. Remember that subtraction is the distance between two points on a number line.

1. $\frac{2}{3}-\frac{1}{6}=$ b.) $\frac{11}{12}-\frac{1}{4}=$ c.) $\frac{1}{2}-\frac{1}{3}=$

(a)

(b)

(c)

ASSIGNMENT: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**2.9 Adding and Subtracting Fractions**

**KEY**: *Do not add or subtract two or more fractions unless they share a common denominator.*

Ex. 1) Find the LCM of the denominators, then evaluate the following expressions.

1. $\frac{2}{3}+\frac{5}{6}=$ b.) $\frac{3}{8}+\frac{3}{4}=$ c.) $\frac{1}{2}+\frac{7}{10}+\frac{3}{5}=$

Ex. 2) Find the LCM of the denominators, then evaluate the following expressions.

1. $\frac{3}{4}-\frac{1}{6}=$ b.) $\frac{7}{12}-\frac{1}{4}=$ c.) $\frac{4}{5}-\frac{7}{10}=$

ASSIGNMENT: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**2.10 Adding and Subtracting Mixed Numbers**

Ex. 1) Add/Subtract the mixed fractions and the whole number.

1. $5-\frac{3}{7}=$ b.) $3+\frac{2}{5}=$ c.) $3-\frac{5}{6}=$

Ex. 2) Add/subtract the mixed fraction.

**STEPS**:

* Change mixed number to improper fraction.
* Do they have the same denominator? If not, find the LCM.
* Add/subtract the top numbers of the fraction.
* Reduce to lowest terms and change to mixed number if required.
1. $2\frac{2}{3}+1\frac{1}{6}=$ b.) $3\frac{4}{5}-2\frac{1}{2}=$ c.) $1\frac{1}{3}+1\frac{4}{9}=$

 d.) $3\frac{1}{5}-1\frac{3}{10}=$ e.) $4\frac{2}{7}+3\frac{1}{2}=$ f.) $1\frac{5}{6}-1\frac{4}{5}=$

ASSIGNMENT: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_