Unit 2 Operations with Fractions

Name: _____

By the end of this unit I should:

1.   Know basics: numerator, denominator, proper, improper and mixed fractions, represent fractions in diagrams and on number lines, equivalent fractions, reduce fractions to lowest terms, change fractions from mixed to improper and vice versa.

2.   Know how to add and subtract fractions. (reviewed from last year)

3.   Model multiplication of a whole number by a fraction (# lines or diagram)

4.   Model multiplication of a fraction by a fraction (proper and mixed) using area model.

5.   Estimate the product and quotient of two fractions and determine if it is close to benchmarks using 0, ½, or 1.

6.   Multiply fractions symbolically using rules (Multiply numerators then denominators, change mixed #s to improper first)

7.   Model division of a whole number and a proper fraction (# lines or diagram)

8.   Model division of a proper fraction by a proper fraction (# lines or diagram).

9.   Divide fractions symbolically using rules (change division to   multiplication and multiply by the reciprocal – change mixed to improper   first).

10.   Solve word problems associated with multiplication and division of fractions as well as addition and subtraction.

11.   Order of operations with fractions (BEDMAS).

And remember to keep organized:

✓ Hand Ins will be placed in your doutangs until the end of the unit

✓   Handouts such as notes, examples, and reference pages should be placed in your binder and labeled with the date.

Name: _____

<u>Adding and Subtracting Fractions</u>

To add or subtract fractions we follow four steps;

1. Determine a common denominator
2. Write equivalent fractions
3. Add or subtract fraction accordingly
4. Write the fraction in lowest terms

Example 1 : $\dfrac{2}{4} + \dfrac{1}{6}$ Example #2 : $\dfrac{4}{5} + \dfrac{2}{10}$

Multiples of 4 :   Multiples of 5 :

Multiples of 6 :   Multiples of 10 :

The common denominator is :   The common denominator is :

<u>Unit 2 Operations with Fractions</u>

Name: _____

Complete the following examples :

a. $\dfrac{1}{6} + \dfrac{1}{4}$

b. $\dfrac{3}{6} - \dfrac{2}{9}$

c. $\dfrac{2}{7} + \dfrac{2}{13}$

d. $\dfrac{3}{8} + \dfrac{2}{4}$

Unit 2 Operations with Fractions

Name: _____

Unit 2 Operations with Fractions

Name: _____

Adding and Subtracting Mixed Numbers & Improper Fractions

You will recall from grade 7 that we can also add and subtract mixed numbers and improper fractions. Numbers should be written in the form of a fraction, so if there is a mixed number you will need to convert it first. The steps for adding and subtracting mixed numbers and improper fractions is :

1. Convert mixed number to improper fraction
   a. Multiply the whole number by the denominator
   b. Add the answer to the numerator
   c. Write the summed answer over the denominator
2. Write equivalent fractions
3. Add or subtract fraction accordingly
4. Write the fraction in lowest terms (or mixed number)

Example #1 : $2\frac{1}{6}+\frac{1}{4}$ Example #2: $2\frac{2}{3}-1\frac{1}{5}$

Complete the following examples on your own

a. $4\frac{1}{4}-\frac{2}{5}=$ b. $3\frac{3}{8}-1\frac{1}{2}$

c. $1\frac{1}{6}+3\frac{1}{4}$ d. $3\frac{3}{6}+1\frac{1}{4}$

Unit 2 Operations with Fractions

Name: _____

Unit 2 Operations with Fractions

Name: _____

Unit 2 Operations with Fractions

Name: _____

Multiplying Fractions

To multiply fractions :

1. Multiply the numerators of the fractions to get the new numerator
2. Multiply the denominator of the fractions to get the new denominator
3. Simplify the fractions if not in lowest terms

Example #1 : $\dfrac{1}{6} \times \dfrac{1}{4}$

Example #2 : $\dfrac{2}{8} \times \dfrac{3}{4}$

Complete the following examples on your own

a. $\dfrac{7}{10} \times \dfrac{5}{6}$

b. $5 \times \dfrac{3}{20}$

c. $\dfrac{3}{5} \times 7$

d. $\dfrac{4}{5} \times \dfrac{13}{14}$

Name: _____

e. $\dfrac{12}{15} \times \dfrac{3}{4}$

f. $\dfrac{10}{20} \times \dfrac{5}{6}$

g. You have 2/3 of a pumpkin pie left over from Thanksgiving. You want to give 1/2 of it to your sister. How much of the whole pumpkin pie will this be?

Multiplying Mixed Numbers

To multiply mixed numbers :

1. Put the mixed number into an improper fraction
2. Multiply the numerators of the fractions to get the new numerator
3. Multiply the denominators of the fractions to get the new denominator
4. Simplify the fraction if not in lowest terms

Example #1 : $5\dfrac{1}{6} \times \dfrac{1}{4}$

Example #2 : $3\dfrac{2}{6} \times \dfrac{1}{4}$

Unit 2 Operations with Fractions

Name: _____

Complete the following questions on your own:

a. $3\frac{4}{5} x \, 2\frac{1}{2}$

b. $4\frac{10}{11} x \, 1\frac{2}{6}$

c. $2\frac{2}{3} x \, 3\frac{1}{4}$

d. $5\frac{3}{5} x \, 3\frac{3}{7}$

Two and a half laps of a running track equal 1km. How many laps equal 3km?

Unit 2 Operations with Fractions

Name: _____

There are 30 students in a class. Four fifths of them have brown eyes. How many students have brown eyes?

Kiera has 5/8 of a cup of powdered sugar. She sprinkles ½ of the sugar onto a plate of brownies and sprinkles the rest onto a plate of lemon cookies. How much sugar does Kiera sprinkle on the brownies?

A minibus that seats 12 people is ¾ full. How many people are seated on the mini bus?

Name: _____

Dividing Fractions

To divide fractions ;

1. Flip the second fraction to create the reciprocal
2. Multiply by the reciprocal of the second fraction
3. Simplify the fractions if not in lowest terms

Example #1 : $\dfrac{3}{4} \div \dfrac{1}{4}$

Example #2 : $\dfrac{5}{7} \div \dfrac{2}{7}$

Complete the following examples on your own :

a) $\dfrac{17}{20} \div \dfrac{1}{2}$

b. $\dfrac{4}{15} \div \dfrac{3}{4}$

c. $\dfrac{15}{7} \div \dfrac{2}{5}$

d. $\dfrac{17}{20} \div \dfrac{1}{6}$

Name: _____

e. $3\frac{4}{5} \div 2\frac{1}{4}$

f. $6\frac{2}{3} \div 4\frac{5}{8}$

<u>Variables</u>

Whenever we do not know a value in math we depict the unknown value with a variable. Variables can be any letter, but the most commonly used variable is 'x'

Remember! To solve one-step equations of the form ax=b, $\frac{x}{a} = b$ we must get the variable alone by performing opposite operations on the constants.

Example #1 : 5g =15

Example #2 : $\frac{2}{3}x =14$

Unit 2 Operations with Fractions

Name: _____

Example # 3 : Three quarters of a can of apple juice fills six glasses. How many glasses will a whole can of apple juice fill?

Example #4 : $\frac{5}{14}x = 3$

Complete the following questions on your own :

Chase has only a quarter- cup measuring cup. How man times would Chase have to fill his measuring cup to measure 2 and a half cups of flour?

<u>Unit 2 Operations with Fractions</u>

Name: _____

Five Sevenths of the 28 students in a grade 8 class visited a science museum on a field trip. How many students did not go on the trip?

One week, Taylor spent one half of her allowance on a dvd, one quarter of her allowance on a T shirt, and one eight of her allowance on bus fares. She had 5$ of her allowance left at the end of the week. How much was her allowance that week?

The average wind speed in Calgary is four fifth of the average wind speed in Regina. The average wind speed in Calgary is 16km/h. What is the average wind speed in Regina?

Name: _____

PEDMAS with Fractions

Order of Operations with Fraction is the same as without. Remember that PEDMAS is an acronym to help remember the order of operations in algebra.

It stands for :

Parenthesis (Brackets)

Exponents

Division

Multiplication

Addition

Subtraction

Example #1 : $6 \div 2 \ (1 + 2)$

Example # 2 : $6 \div 2 \ (\frac{6}{3} \times 2)$

Complete the following examples on your own :

a. $\frac{1}{2} \div (\frac{1}{2} \times \frac{1}{2})$

b. $3\frac{1}{2} \times (3 + \frac{1}{2})$

Name: _____

$c. \frac{11}{12} - \frac{2}{3} \times \left(\frac{3}{4} + 4\right)$

$d. \frac{1}{2} \div \left(\frac{1}{5} \times \frac{3}{4}\right) \div 5$

e. The mean of 3 numbers is $\frac{2}{3}$. Two of the fractions are $\frac{1}{3}$ and $\frac{3}{4}$. What is the third fraction?

f. Calculate $\frac{1}{2} \times \frac{1}{2} \times \frac{1}{2}$

Name: _____

<u>Practice!!</u>

Pages 49-50 Questions # 1,3,4,5,7,15

Pages 55-56 Questions # 3,5,6,8,9,10,11,12,15

Pages 61-62 Questions #3,4,7,8,11

Page 71 Questions #3-7

Pages 79-80 Questions #3,4,6,7,11,13

Pages 85-86 Questions #1,2,3,6,8,12,14

Pages 90-91 Questions #3,5,6,7,11

Pages 96-100 All Questions

Unit 2 Operations with Fractions

Name: _____