STUDENT _____ GROUP _____

INSTRUCTOR _____ DATE _____

Math Lab Lesson #4 Classwork:

Working with Fractions

Consider the fraction $\frac{2}{6}$. What is a possible situation that could be modeled by this fraction?

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★Video#1: Four Fraction Models and Common Denominators (what are they good for?) PART 2

(PART 1 is good to watch at home, but not in class unless you finish all of the Classwork)

★**Take Notes:**

★**Example:**

1. Which is greater: $\frac{2}{7}$ or $\frac{1}{3}$?

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2. Find the sum: $\frac{3}{4} + \frac{5}{2}$

1. a) Arrange the following fractions from least to greatest:

$$\frac{2}{3}, \frac{5}{9}, \frac{3}{5}$$

b) Create another fraction that is **smaller** than all of these fractions, and **show that it is smaller** by finding a common denominator.

c) Create another fraction that is **larger** than any of these fractions, and **show that it is larger** by finding a common denominator.

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2. a) Use the numbers $3, 4,$ and 6 to **create six different fractions** (For example, $\frac{3}{4}$ and $\frac{6}{3}$ would be two fractions that use these numbers).

b) Order your six fractions from least to greatest.

c) Add two of these fractions together.

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★Video#2: Finding Common Denominators in Different Contexts

★**Example:** a) The number of inches of water in a bucket during a steady rain shower is given by the expression $\frac{2}{5}t + \frac{6}{5}$, where t is the number of minutes since the shower started.

If there are 6 inches of rain in the bucket, how long has it been raining for?

b) If $\frac{5}{9}m - \frac{4}{18}m = \frac{6}{7} + \frac{8}{7}$, what is the value of m ?

1. The average length of a baby snake, in inches, is given by the expression $\frac{3}{4}t + \frac{7}{4}$, where t is the number of days since the snake was born.

a) How many inches is the snake 3 days after it is born?

b) How many days old is a snake that is 10 inches long?

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2. If $\frac{2}{3}k + \frac{4}{3}k = \frac{1}{2} + \frac{1}{3} + \frac{1}{6}$, what is the value of k ?

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3. Consider the equation $\frac{3}{5}x + \frac{7}{5}x = \frac{a}{3} + \frac{15}{3}$.

If the solution to this equation is $x = 3$, then what is the value of a ?

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★Video#3: The Measuring Model in Different Contexts

★**Example:** a) Esther has a ribbon that is $\frac{4}{3}$ of a yard long. If she cuts the ribbon into equal pieces each measuring $\frac{1}{15}$ of a yard long, then how many pieces will she have?

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b) In the past one and half years, Theodore grew an average of $\frac{2}{3}$ inches each month. Today, he is 52 inches tall.

How tall was Theodore one and a half years ago?

1. A relay race is $\frac{3}{4}$ of a mile long. Each runner on a team will run $\frac{1}{8}$ of a mile. How many runners are on the team?

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2. Sammy has a piece of bubble tape gum that is $\frac{11}{8}$ of a foot long. If she cuts the gum into equal pieces each measuring $\frac{1}{16}$ of a yard long, then how many pieces will she have?

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3. A large sandwich has $\frac{12}{7}$ ounces of mustard spread evenly over the entire sandwich. If it is cut into 12 pieces, then how much mustard is on each piece?

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4. In the past two and half years, a dwarf tree in the Brooklyn Botanical Gardens grew an average of $\frac{1}{5}$ inches each month. Today, the dwarf tree is 37 inches tall.

a) How many inches does the dwarf tree grow in 6 months? In 1 year?

b) How many months would it take the dwarf tree to grow 1 inch? 2 inches?

c) How tall was the dwarf tree two and a half years ago?

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Video#4: Introduction to Operations with Fractions

Example:

a) Multiplying fractions:

$\left(\frac{5}{2}\right) \cdot \left(\frac{8}{3}\right)$

$5 \cdot \left(\frac{8}{3}\right)$

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b) Dividing Fractions:

$\left(\frac{3}{5}\right) \div \left(\frac{7}{10}\right)$

$\left(\frac{3}{5}\right) \div 7$

$7 \div \left(\frac{3}{5}\right)$

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1. Multiply and simplify:

$2 \cdot \left(\frac{15}{6}\right)$	$\left(\frac{1}{3}\right) \cdot \left(\frac{15}{6}\right)$
$\left(\frac{2}{3}\right) \cdot \left(\frac{15}{6}\right)$	$\left(\frac{2}{3}\right) \cdot \left(\frac{1}{6}\right)$

2. Divide and simplify:

$\left(\frac{2}{3}\right) \div \left(\frac{15}{6}\right)$	$\left(\frac{2}{3}\right) \div \left(\frac{6}{15}\right)$
$\left(\frac{2}{3}\right) \div \left(\frac{2}{9}\right)$	$\left(\frac{2}{3}\right) \div \left(\frac{4}{3}\right)$

3. Let A be some number.

a) Write a division problem that is equivalent to $A \cdot \left(\frac{1}{5}\right)$

b) Write a multiplication problem that is equivalent to $A \div \left(\frac{1}{5}\right)$

c) Write a division problem that is equivalent to $A \cdot \left(\frac{2}{3}\right)$

d) Write a multiplication problem that is equivalent to $\left(\frac{1}{5}\right) \div A$

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4. Which of the following expressions is **not equivalent** to the others?

A) $\frac{(12)(2)}{4}$

B) $2 \div \frac{4}{12}$

C) $\frac{4}{\left(\frac{12}{2}\right)}$

D) $2\left(\frac{12}{4}\right)$

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MATH LAB BOSS LEVEL

1. a) Find the difference:

$$\frac{9}{5} - \frac{5}{9}$$

b) Generalize your answer to a) by rewriting the difference below using common denominators:

$$\frac{a}{b} - \frac{b}{a}$$

c) Could it ever be that $\frac{a}{b} - \frac{b}{a} = 0$? Try to find values for a and b that satisfy this equation, and explain your thinking.