Objectives:

- Students will memorize the multiplication table, as evidenced by them passing "minute quizzes."
- Students will find the prime factorization of whole numbers, as evidenced by them completing a warm-up worksheet where they do so.
- Students will use fraction circles to show that adding fractions across is incorrect, as evidenced by them completing a homework assignment where they do so.
- Students will use fraction circles to add fractions with common denominators, as evidenced by them completing a homework assignment where they do so.

Student Materials on Desk Corner:

- Homework #2-22
- Homework Checker
- Readiness Checker

Student Materials for Class:

- Homework Log
- Binder Paper
- Pencils

Teacher Materials:

- "Warm-up 2-23" for each student
- "Minute Quiz 2-23" for each student
- "Homework #2-22" answer key and grading roster for TA
- "Homework #2-23" handout for each student

Homework:

- Finish Homework #2-23
- ALEKS

Time	Activity
10 min	**MINUTE QUIZ, WARM-UP, HOMEWORK COLLECTION, AND ATTENDANCE** **Minute Quiz and Warm-up** When the bell rings, quickly go around and put the **minute quiz** on each student's desk, facedown. Then, start everyone on the quiz at the same time and give everyone one minute. While students are working on the quiz, pass out the **warm-ups** so that students can work on them once they're done with the minute quiz. Also, stamp the **readiness checkers** of students who were ready when the bell rang and had their readiness checkers out. **Homework Collection and Attendance** Instruct the TA go around and collect **homework** and stamp **homework checkers**. Give the TA the answer key and have him or her grade the homework that was collected. During this time, take **attendance**. **Warm-up & Notes Checker** Once all the homework is collected, go around and stamp the students' "Warm-up and Notes Checkers."
20 min	**LESSON: DON'T ADD ACROSS** **Notes** Follow the handwritten Cornell Notes. Once students are finished, go around and stamp the students' "Warm-up and Notes Checkers."
20 min	**CLASSWORK** Pass out the **homework/classwork** handout and have students write down the assignment on their homework logs. Have the TA pass out **fraction circles** and write own which student has which set of fraction circles. Students should use the fraction circles to complete Homework #2-23, which will serve as the classwork.
30 min	**ALEKS** When students finish their classwork, they should continue with **ALEKS**. Use this student work time to **return graded homework**.

Numeracy
Minute Quiz 2-23 A

Name:
Date: Period:

Solve the following multiplication problems. You have exactly one minute!

12 • 9 =	10 • 7 =	5 • 10 =
11 • 11 =	2 • 6 =	10 • 9 =
2 • 6 =	5 • 12 =	9 • 3 =
4 • 12 =	6 • 12 =	3 • 2 =

Numeracy
Minute Quiz 2-23 A

Name:
Date: Period:

Solve the following multiplication problems. You have exactly one minute!

12 • 9 =	10 • 7 =	5 • 10 =
11 • 11 =	2 • 6 =	10 • 9 =
2 • 6 =	5 • 12 =	9 • 3 =
4 • 12 =	6 • 12 =	3 • 2 =

Numeracy
Minute Quiz 2-23 A

Name:
Date: Period:

Solve the following multiplication problems. You have exactly one minute!

12 • 9 =	10 • 7 =	5 • 10 =
11 • 11 =	2 • 6 =	10 • 9 =
2 • 6 =	5 • 12 =	9 • 3 =
4 • 12 =	6 • 12 =	3 • 2 =

Numeracy
Minute Quiz 2-23 B

Name:
Date: Period:

Solve the following multiplication problems. You have exactly one minute!

6 • 2 =	11 • 5 =	4 • 10 =
1 • 8 =	2 • 5 =	5 • 11 =
12 • 4 =	7 • 4 =	1 • 7 =
10 • 2 =	10 • 3 =	2 • 6 =

Numeracy
Minute Quiz 2-23 B

Name:
Date: Period:

Solve the following multiplication problems. You have exactly one minute!

6 • 2 =	11 • 5 =	4 • 10 =
1 • 8 =	2 • 5 =	5 • 11 =
12 • 4 =	7 • 4 =	1 • 7 =
10 • 2 =	10 • 3 =	2 • 6 =

Numeracy
Minute Quiz 2-23 B

Name:
Date: Period:

Solve the following multiplication problems. You have exactly one minute!

6 • 2 =	11 • 5 =	4 • 10 =
1 • 8 =	2 • 5 =	5 • 11 =
12 • 4 =	7 • 4 =	1 • 7 =
10 • 2 =	10 • 3 =	2 • 6 =

Numeracy
Minute Quiz 2-23 C

Name:
Date: Period:

Solve the following multiplication problems. You have exactly one minute!

5 • 6 =	7 • 10 =	7 • 9 =
4 • 5 =	1 • 7 =	6 • 7 =
6 • 10 =	10 • 2 =	9 • 8 =
12 • 4 =	11 • 1 =	1 • 7 =

Numeracy
Minute Quiz 2-23 C

Name:
Date: Period:

Solve the following multiplication problems. You have exactly one minute!

5 • 6 =	7 • 10 =	7 • 9 =
4 • 5 =	1 • 7 =	6 • 7 =
6 • 10 =	10 • 2 =	9 • 8 =
12 • 4 =	11 • 1 =	1 • 7 =

Numeracy
Minute Quiz 2-23 C

Name:
Date: Period:

Solve the following multiplication problems. You have exactly one minute!

5 • 6 =	7 • 10 =	7 • 9 =
4 • 5 =	1 • 7 =	6 • 7 =
6 • 10 =	10 • 2 =	9 • 8 =
12 • 4 =	11 • 1 =	1 • 7 =

Numeracy
Warm-up 2-23

Name:
Date: Period:

Find the prime factorization of the following whole numbers.

1) 72

2) 65

3) 32

4) 78

5) 98

6) 63

Numeracy
Warm-up 2-23

Name:
Date: Period:

Find the prime factorization of the following whole numbers.

1) 72

2) 65

3) 32

4) 78

5) 98

6) 63

Tom Wong
12/11/08

Don't Add Across

Section → Introduction

fraction circles

Fraction circles are tools that help us understand fractions.

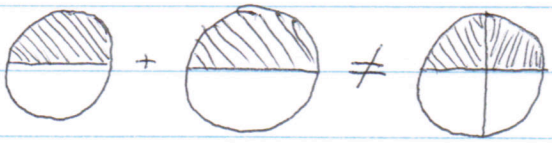
Ex:  $= \frac{2}{5}$

We can use them to add and subtract fractions.

Section → Don't Add Across

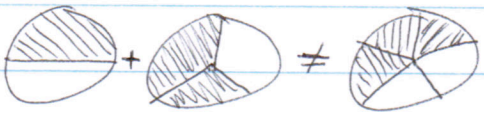
Ex: True or false?

$$\frac{1}{2} + \frac{1}{2} \stackrel{?}{=} \frac{2}{4}$$



Ex: True or false?

$$\frac{1}{2} + \frac{2}{3} \stackrel{?}{=} \frac{3}{5}$$



So, don't add across.

Section → Correct Way to Add

Ex: True or false?

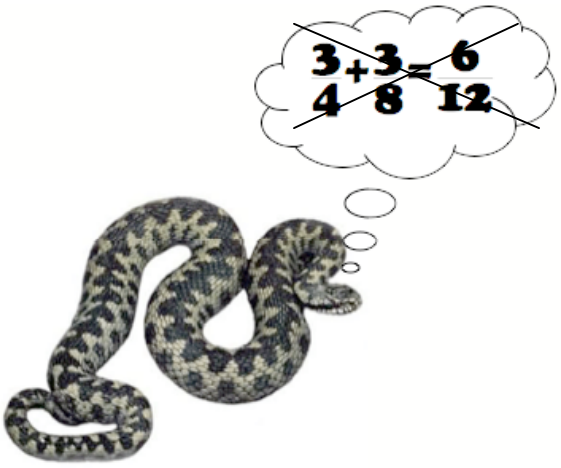
$$\frac{3}{12} + \frac{2}{12} \stackrel{?}{=} \frac{5}{12}$$

← # of pieces changes

← size of pieces stays the same

Numeracy
Homework #2-23 – Don't Add Across

Name:
Date: Period:

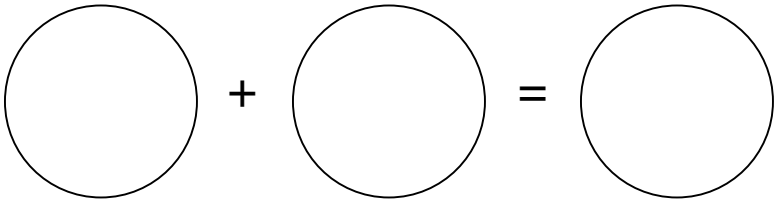


Meet my pet snake… he's great at adding **whole numbers** (he is an ***adder*** after all!), but not so good at adding **fractions**.

He always makes the same mistake… he tries to ***add across***. It never works! But he still does it again and again… Can you help show him why this doesn't work?

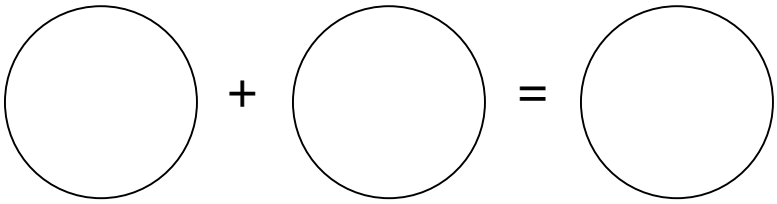
Use your fractions circles to figure out if each equation is true or false. Draw the fraction circles next to each problem.

1) $\frac{2}{5} + \frac{2}{5} = \frac{4}{10}$



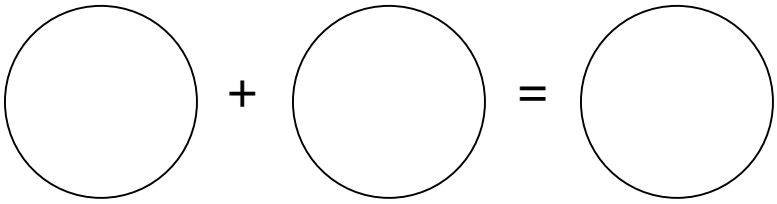
True or False?

2) $\frac{3}{4} + \frac{3}{8} = \frac{6}{12}$



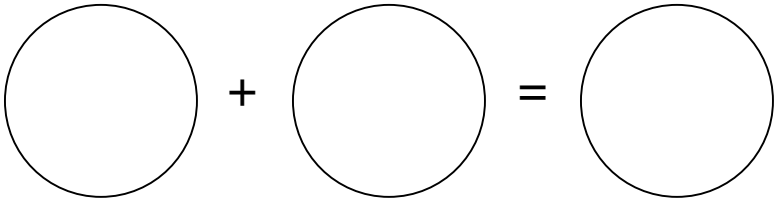
True or False?

3) $\frac{2}{10} + \frac{1}{10} = \frac{3}{10}$



True or False?

4) $\frac{1}{6} + \frac{3}{6} = \frac{4}{6}$



True or False?

So how do you really add fractions? Can you explain it in your own words?

Fraction Operations

Add & Subtract
Common Denominators

Looks Like

$$\frac{1}{5}+\frac{2}{5}$$

Step 1: Write the sum/difference of the numerators over the common denominator.

Step 2: Simplify.

Add & Subtract
Differing Denominators

Looks Like

$$\frac{1}{4}+\frac{5}{6}$$

Step 1: Find the least common multiple of the denominators. This gives us the smallest common denominator that works.

Step 2: Find equivalent fractions with the common denom' we found in step 1. Then, add/subtract these fractions.

Step 3: Simplify.

Multiply

Looks Like

$$\frac{3}{4}\cdot\frac{2}{5}$$

Step 1: Write the product of the numerators over the product of the denominators.

Step 2: Simplify.

Divide

Looks Like

$$\frac{8}{9}\div\frac{2}{3}$$

Step 1: Multiply the first fraction by the reciprocal of the second fraction.

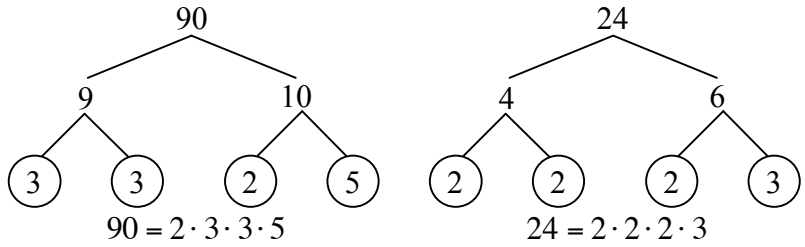
Step 2: Simplify.

Simplifying Fractions

To simplify a fraction, find the prime factorization of the top and bottom numbers and then "cancel" the terms that appear in both. If the result is an improper fraction, convert it to a mixed number.

Ex: Simplify $\frac{90}{24}$.

First, find the prime factorization of the top and bottom numbers.



Now, cancel the terms that appear in both.

$$\frac{90}{24} = \frac{2 \cdot 3 \cdot 3 \cdot 5}{2 \cdot 2 \cdot 2 \cdot 3} = \frac{3 \cdot 5}{2 \cdot 2} = \frac{15}{4}$$

Since the result is an improper fraction, convert it to a mixed number.

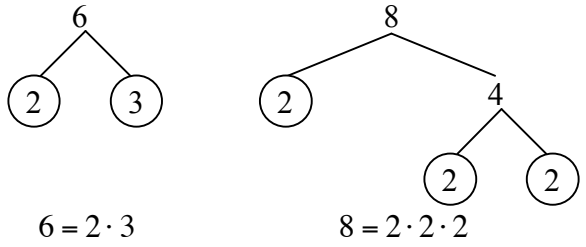
$$4\overline{)\,15}\ \begin{matrix}3\\ -12\\ \hline 3\end{matrix} \Rightarrow \frac{15}{4} = 3\frac{2}{4} = 3\frac{2}{2 \cdot 2} = \boxed{3\frac{1}{2}}$$

Least Common Multiple

To find the least common multiple (lcm) of two numbers, first find the prime factorization of both numbers. Then, multiply together the greatest number of each prime number to find the lcm.

Ex: Find the least common multiple of 6 and 8.

First, find the prime factorization of both numbers.



Now, multiply together the greatest number of each prime number to find the lcm.

On the left, we have one 2.
On the right, we have three 2's.
So, we'll keep three 2's for the lcm.

On the left, we have one 3.
On the right, we have zero 3's.
So, we'll keep one 3 for the lcm.

Then, $\text{lcm}(6,8) = 2 \cdot 2 \cdot 2 \cdot 3 = \boxed{24}$