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 find the least common multiple of whole numbers, as evidenced by them completing a homework assignment where they do so.

Student Materials on Desk Corner:
- Homework #2-6
- Homework Checker
- Readiness Checker

Student Materials for Class:
- Homework Log
- Binder Paper
- Pencils

Teacher Materials:
- "Warm-up 2-7" for each student
- "Minute Quiz 2-7" for each student
- "Homework #2-6" answer key and grading roster for TA
- "Homework #2-7" handout for each student

Homework:
- Homework #2-7

Time	Activity
Before Bell	**DO NOW** As students enter the classroom, shake hands and give them a copy of the **warm-up**. Remind students that there is a minute quiz, so students need to be seated quietly with a pencil when the bell rings.
5 min	**MINUTE QUIZ, HOMEWORK COLLECTION, AND WARM-UP** **Minute Quiz** 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, stamp the **readiness checkers** of students who were ready when the bell rang and had their readiness checkers out. **Homework Collection** 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. **Warm-up** After the minute quiz, students should work on the **warm-up** while you take **attendance**.
30 min	**LESSON: SIMPLIFYING FRACTIONS** **Notes** Follow the handwritten Cornell Notes. **Homework** Pass out the ""Homework #2-7" handout and have students write down the assignment on their homework logs.
45 min	**ALEKS** Students should continue with **ALEKS**. Use this student work time to **return graded homework**.

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

$10 \cdot 3 =$	$9 \cdot 9 =$	$9 \cdot 10 =$
$6 \cdot 2 =$	$10 \cdot 6 =$	$7 \cdot 2 =$
$7 \cdot 6 =$	$4 \cdot 2 =$	$11 \cdot 4 =$
$6 \cdot 4 =$	$6 \cdot 8 =$	$8 \cdot 6 =$

Numeracy
Minute Quiz 2-7 B

Name:
Date: Period:

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

9 • 11 =   11 • 4 =   12 • 8 =

3 • 1 =   1 • 9 =   9 • 12 =

10 • 4 =   4 • 8 =   10 • 5 =

1 • 11 =   3 • 12 =   5 • 1 =

Numeracy
Minute Quiz 2-7 C

Name:
Date: Period:

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

5 • 6 =   3 • 9 =   8 • 6 =

5 • 4 =   10 • 10 =   1 • 3 =

8 • 7 =   5 • 7 =   11 • 2 =

11 • 9 =   5 • 8 =   5 • 2 =

Numeracy
Warm-up 2-7

Name:
Date: Period:

Find the prime factorization of the following whole numbers.

1) 40   2) 28   3) 52   4) 42

5) 390   6) 884   7) 490   8) 1140

Least Common Multiple

Section → Definitions

multiples   The multiples of a number are the numbers you get when you multiply
             the number by the positive integers (1, 2, 3, ...).

             Ex: The multiples of 4 are 4, 8, 12, 16, ㉠ 24, 28, 32, 36, ㊵ 44, ...
             Ex: The multiples of 5 are 5, 10, 15, ㉠ 25, 30, 35, ㊵ 45, 50, ...

             Notice that 20 and 40 appear in both lists. These numbers are called
common   common multiples. The common multiples of two numbers are
multiple   the multiples that they have in common.

             Ex: The multiples of 2 are 2, 4, ⑥ 8, 10, ⑫ 14, 16, ⑱ 20, ...
                 The multiples of 3 are 3, ⑥ 9, ⑫ 15, ⑱ 21, ...
                 So, the common multiples of 2 and 3 are 6, 12, 18, ...

least common The least common multiple is the smallest of the common multiples.
multiple
                  From the first example,
             Ex: 20 is the least common multiple of 4 and 5. We write lcm(4,5) = 20.
   Ex: lcm(2,3) = 6.

Section → Finding the lcm using Prime Factorization
             Instead of listing a bunch of multiples and comparing the lists
             (which can take a long time for some numbers), we will use
             prime factorization.

To find the 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: $lcm(16, 36) = ?$

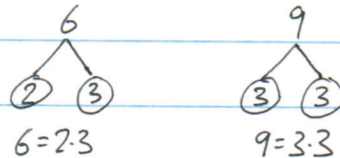16 = 2·2·2·2   36 = 2·2·3·3
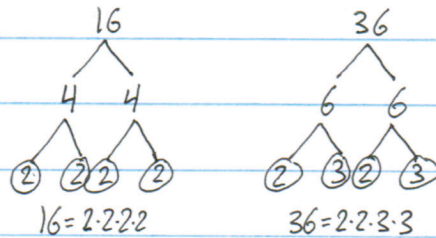
greatest # of 2's is 4.

greatest # of 3's is 2

So, $lcm(16, 36) = 2·2·2·2·3·3 = 144$

Ex: $lcm(6, 9) = ?$

6 = 2·3   9 = 3·3

greatest # of 2's is 1

greatest # of 3's is 2

So, $lcm(6, 9) = 2·3·3 = 18$

Least Common Multiple

The smallest (non-zero) number that is a multiple of two or more numbers.

Least Common Multiple is made up of the words *Least*, *Common* and *Multiple*:

What is a "Multiple" ?

The multiples of a number are what you get when you **multiply it by other numbers** (such as if you multiply it by 2,3,4,5, etc). Just like the multiplication table.

Here are some examples:

> The mutlples of **3** are **6, 9, 12, 15, 18, 21, etc** ...
> The mutlples of **12** are **24, 36, 48, 60, 72, etc...**

What is a "Common Multiple" ?

If you have two (or more) numbers, and you check through their multiples and find the same value in both lists then that is a *common* multiple of those numbers.

For example, if you write down the multiples of two different numbers (say 4 and 5) the *common* multiples are those that are found in both numbers:

> The multiples of 4 are 8,12,16,**20**,24,28,32,36,**40**,44,...
> The multiples of 5 are 10,15,**20**,25,30,35,**40**,45,50,...
>
> Notice that 20 and 40 appear in both lists? So, the common
> multiples of 4 and 5 are: **20, 40,** (and 60, 80, etc ..., too)
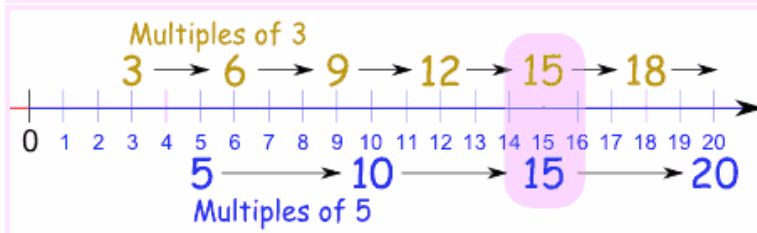
What is the "Least Common Multiple" ?

It is simply the **smallest** of the common multiples. In our previous example, the smallest of the common multiples is 20, so the *Least* Common Multiple of 4 and 5 is **20**.

Finding the Least Common Multiple

It is a really easy thing to do. Just start listing the multiples of the numbers until you get a match.

Example 1: Find the least common multiple for 3 and 5:

The multiples of 3 are *6, 9, 15, ...*, and the multiples of 5 are *10, 15, 20, ...*, like this:

As you can see on this number line, the first time the multiples match up is 15. **Answer: 15**

And you can find the least common multiple of 3 (or more) numbers.

Example: Find the least common multiple for 4, 6, and 8

Multiples of 4 are: 8, 12, 16, 20, **24**, 28, 32, 36, ...
Multiples of 6 are: 12, 18, **24**, 30, 36, ...
Multiples of 8 are: 16, **24**, 32, 40, ...

So, 24 is the least common multiple (I can't find a smaller one !)

Hint: You can have smaller lists for the bigger numbers.

Least Common Multiple Tool

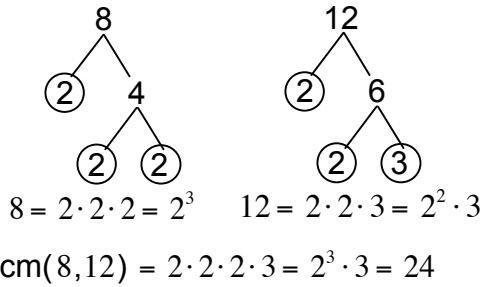There is a *another* method, you can use our Least Common Multiple Tool to find it automatically.

here's more ...
- Introduction to Fractions
- Simplifying Fractions
- Comparing Fractions
- Least Common Multiple Tool
- Least Common Denominator
- Greatest Common Factor
- Adding Fractions
- Subtracting Fractions
- Fractions Index

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Find the least common multiple of the following pairs of whole numbers:

Ex.) 8 and 12

```
      8              12
     / \            /  \
   (2)  4         (2)   6
       / \             / \
     (2) (2)         (2) (3)
```

$8 = 2 \cdot 2 \cdot 2 = 2^3$ $12 = 2 \cdot 2 \cdot 3 = 2^2 \cdot 3$

$\text{lcm}(8,12) = 2 \cdot 2 \cdot 2 \cdot 3 = 2^3 \cdot 3 = 24$

1) 4 and 6

2) 3 and 5

3) 4 and 10

4) 2 and 3

5) 3 and 4

6) 7 and 14

7) 8 and 6

8) 3 and 6

9) 12 and 18

10) 4 and 7

11) 12 and 15

12) 9 and 12

13) 5 and 7

14) 8 and 10

15) 8 and 14