Danielle Hall
7th Grade Math
Periods 3, 5, and 7

**Approximate Time:**
50 minutes

**Objective:**
The students will identify prime factorizations for numbers by creating factor trees.

*7th Grade Math (review for 1.b.) DOK 1, Bloom's Level: Knowledge*

**Materials:**
Paper, Pencil, Do Now booklets, Dry Erase Markers, textbook, chart paper, markers

**Do Now (5 minutes):**
Are the following numbers divisible by 2, 3, 4, 5, 6, 8, 9, 10, or 12? List all they are divisible by.
- a. 34,278
- b. 8,222
- c. 92,008
- d. 33,111

**Set (5 minutes):**
Have you ever faced a task that looked way too big or too difficult to even start? For example, when you have to memorize poems or speeches for Ms. Taylor's class, does it sometimes seem like the speech is way too long, and you'll never be able to memorize ALL of it?! Raise your hand if you've thought like that before. Who can tell me what they do to overcome this thought? A lot of times, it is helpful to break things down into smaller pieces so they are more manageable and easier to look at. If you were memorizing a speech, you might start with the first line or two. If it is broken down into small pieces, it is easier to work with right?

A lot of times, it is the same way with numbers. If I wanted you to find the GCF of two really large numbers, would you know where to start? Today, we are going to take something big and break it down into smaller pieces. We are going to take what we learned yesterday and apply that to factor trees and prime factorizations. When we start off with really large numbers, we can use our divisibility rules to help us get started.

**Procedures:**
A. Notes: Define prime number and prime factorization. Have the students look these terms up in the back of their books. Once they are finished, discuss the definition and get it into their own words. Then have them generate 4 examples of prime numbers. The notes will also have examples of factor trees. When they get to the end of a branch, have them circle it so they know they're finished. Also, discuss what the product should be if you multiply your prime factorization out.
B. Discuss how the rules of divisibility can help when making a factor tree. Try some bigger numbers: Give each group one large (3-digit) number to come up with a factor tree and prime factorization for. They will put this on a large sheet of chart paper which will be graded and hung up in the class. Choose two of them the go over as a whole class and make sure they agree.
C. Writing the prime factorization with exponents: Ask if there is any way that the prime factorizations can be written in a shorter form. The students should have done this before, so someone should come up with it.

**Closure (3 minutes):**
Now we can take really big numbers and break them down into smaller pieces. When you start and look at a number, how do you know if it's divisible by 2? 3? 4? 5? 6? Start at these numbers. If you have to break a number down, see if it is divisible by the numbers that are the easiest to recognize.
When making your tree, then, how do you find the number that goes on the other branch? (divide by the other number). Continue breaking down each number until you get to what kind of number? (prime). How can we write prime factorizations in the shortest way possible? (exponents)

We will use what we learned about factor trees and prime factorization today to find the GCF and LCM of numbers over the next two days. We can take any two large numbers and find their GCF/LCM by breaking them down and following a few simple steps.

Assessment:
Informal:
● The students will be observed (M) as they work on their independent practice on factor trees (C).

Formal:
● The chart paper posters (M) on factor trees (C) will be collected in class, and the grade will be recorded in the grade book (D).
● Factor trees (C) will be tested on the written quiz (M) on Friday and on the written test at the end of the unit (M), and the grades will be recorded in the grade book (D).