

Core Content

Cluster Title: Gain familiarity with factors and multiples.

Standard 4: Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite.

MASTERY Patterns of Reasoning:**Conceptual:**

Students will understand factor pairs as two whole numbers that multiply together to get one product.

Students will understand that prime numbers have exactly one factor pair.

Students will understand that composite numbers have more than one factor pair.

Students will understand multiples as a product of two given whole numbers.

Procedural:

Students can list the multiples of the numbers 2 through 9 up to 100.

Students can create a list or chart of factor pairs of whole numbers 1-100.

Students can identify, from a list or chart, which whole numbers are prime or composite.

Representational:

Students can use tools such as number lines, hundreds charts, arrays, or cubes to model relationships between factors and multiples.

Supports for Teachers

Critical Background Knowledge**Conceptual:**

Students will understand whole numbers as the counting numbers plus 0.

Students will understand the Commutative Property of Multiplication.

Procedural:

Students have fluency in basic multiplication and division facts 0-9

<p>Representational: Students are familiar with number line structure Students have the ability to build arrays for basic facts</p>
<p>Academic Vocabulary and Notation factor, multiple, prime, composite, whole number</p>

Instructional Strategies Used	Resources Used
<p>Using a hundreds chart, color-code the multiples for each of the numbers 2 through 9. Identify patterns for multiples of single digit numbers.</p> <p>Use the Sieve of Eratosthenes to find the prime numbers from 1 to 100. Note: The video is for teacher information only. Do NOT simply show it to the students. Students should work through the 100 chart using the sieve method described in the video. Take several days for this activity.</p>	<p>http://illuminations.nctm.org/LessonDetail.aspx?ID=L620 Students distinguish between numbers with several factors and those with only a few factors.</p> <p>http://illuminations.nctm.org/lessons/FactorGame/FactorGame-AS-Problems.pdf This link offers a worksheet that assesses students' knowledge after playing the Factor Game.</p> <p>http://www.xpmath.com/forums/arcade.php?do=play&gameid=60 Play King Kong by whacking him if he's holding a prime number.</p> <p>http://www.aaamath.com/fra63ax2.htm The computer lists a number and the student identifies it as prime or composite.</p> <p>http://www.mathplayground.com/howto_primenumbers.html Watch a video that defines the terms from the standard, including factor, prime, and composite.</p>
<p>Assessment Tasks Used</p>	

Skill-Based Task:**Problem Task:**

Students at Creek Elementary are going to an assembly. Each class arranges its chairs in a rectangular form. What are all the possible arrangements for the following classes?

Miss Franklin 30 students

Mr. Clark 27 students

Ms. Rodriguez 31 students

Mrs. Smith 13 students

Help the students as they work through the task by asking questions to help them use multiple strategies. Then debrief, talking about the characteristics of the above numbers. Which ones had equal rows, which did not and why? Have the students write in their math journals how they solved the problem and why their answer is correct.