

## Core Content

**Cluster Title:** Understand place value.

**Standard 1:** Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases:

- a. 100 can be thought of as a bundle of ten tens—called a “hundred.”
- b. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).

### **MASTERY Patterns of Reasoning:**

#### **Conceptual:**

Students will understand that one represents a single unit of measurement in counting.

Students will understand that ten ones can be “bundled” together to make one set of ten; a ten can also be represented as 10 single units.

Students will understand that ten sets of ten can be “bundled” together to make a hundred; a hundred can also be represented as 100 single units.

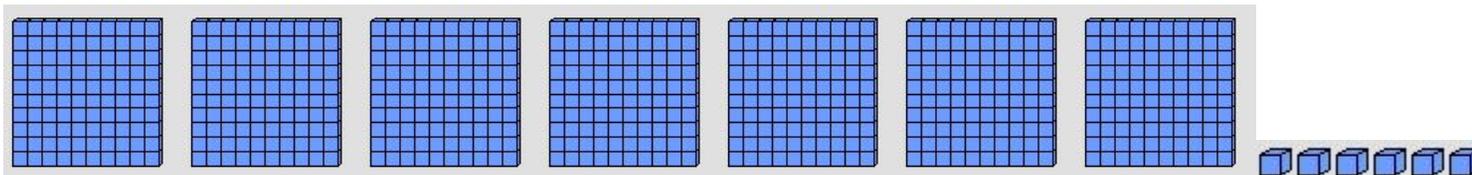
Students will understand that when numbers are bundled into sets of hundreds, there are zero tens and zero ones.

#### **Procedural:**

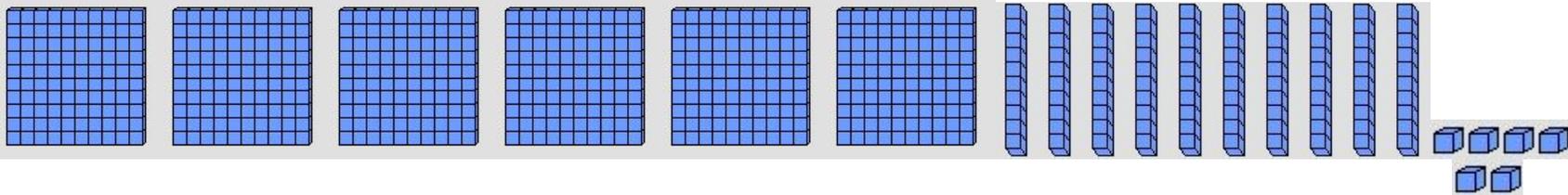
Students can identify the value of a given digit in a three-digit number (e.g., find the value of the 7 in 706; where 7 = 700).

#### **Representational:**

Students can model a given number using base ten blocks, straws, beans, etc (e.g., of most “efficient” form of base 10 where 706 can be thought of as 7 hundreds and 6 ones).



Students can model the same number in different ways (example using 706 again; 706 can be thought of as 6 hundreds, 10 tens, and 6 ones).



Students can illustrate a given number using a place value drawing in a math notebook.

## Supports for Teachers

### Critical Background Knowledge

#### Conceptual:

Students can identify the value of a given number in hundreds, tens, and ones.

#### Procedural:

Students can group 10 single units into a bundle of 10; group 10 sets of 10 into a bundle of 100.

Students can identify the value of a digit in a two-digit number (e.g., find the value of the 2 in 29; where the 2 represents 20).

#### Representational:

Students can model various numbers using base ten blocks representing hundreds, tens, and ones.

Students can compose a bundle of 10 from ten single units and decompose a bundle of 10 into 10 single units.

Students can model the same number in different ways.

### Academic Vocabulary and Notation

ones, tens, hundreds, cube, long, flat, decomposing, composing, trading, grouping, regrouping or ungrouping

Instructional Strategies Used	Resources Used
<p>Teacher models how to represent a three-digit number with base 10 blocks (suggested use: <a href="http://nlvm.usu.edu/">http://nlvm.usu.edu/</a> or base 10 manipulatives and document camera).</p> <p>Students model the same number using manipulatives or pictorial representations.</p> <p>Students need repeated practice building numbers with a variety of materials. Students should also write the numbers and be asked to label the place value position.</p> <p>Teacher models the concept of grouping 10 single units into a bundle of 10; also groups 10 sets of 10 into a bundle of 100 (suggested use: <a href="http://nlvm.usu.edu/">http://nlvm.usu.edu/</a> or base 10 manipulatives and document camera).</p> <p>Student models the concept of grouping 10 single units into a bundle of 10; also groups 10 sets of 10 into a bundle of 100 using manipulatives or pictorial representations.</p> <p>Teacher presents three-digit number with one of the digits underlined (e.g., 2<u>5</u>1—What is the value of the 5 in this number?).</p> <p>Students need repeated practice identifying the value of the underlined digit in a multi-digit number.</p>	<p><a href="http://www.amathsdictionaryforkids.com/dictionary.html">http://www.amathsdictionaryforkids.com/dictionary.html</a></p> <p><a href="http://nlvm.usu.edu/">http://nlvm.usu.edu/</a></p> <p><a href="http://mathwire.com/numbersense/placevalue.html">http://mathwire.com/numbersense/placevalue.html</a></p> <p>Pallotta, Jerry. <i>100 Ways to get to 100</i>. Cartwheel Books, 1949.</p> <p>Lopresti, Angeline Sparagna. <i>A Place for Zero</i>. Charlesbridge Publications, 2003.</p> <p>Richardson, Kathy. <i>Understanding Numbers: Place Value</i>. Math Perspectives. Web site: <a href="http://mathperspectives.com/pub_un.html">http://mathperspectives.com/pub_un.html</a></p> <p>Richardson, Kathy. <i>Assessing Math Concepts: Grouping Tens</i>. Math Perspectives. Web site: <a href="http://mathperspectives.com/pub_amc.html">http://mathperspectives.com/pub_amc.html</a></p> <p>Richardson, Kathy. <i>Assessing Math Concepts: Two Digit Addition and Subtraction</i>. Math Perspectives. Web site: <a href="http://mathperspectives.com/pub_amc.html">http://mathperspectives.com/pub_amc.html</a></p>

<b>Assessment Tasks Used</b>	
<p><b>Skill-Based Task:</b> Student will correctly model three three-digit numbers using base 10 blocks or pictorial representation:</p> <p>248; 309; 780</p> <p>Student will correctly identify the value of an underlined digit in a three-digit number.</p>	<p><b>Problem Task:</b></p> <ol style="list-style-type: none"><li>1. There are 431 animals that need to be transported to the circus. If 10 animals can fit in a trailer and 10 trailers can fit on a truck, how many trucks and trailers will be needed to transport the animals to the circus? Show your thinking with pictures, words or numbers.</li><li>2. Given three digit cards, build the largest number possible and the smallest number possible. Students should also use a model to build or draw the numbers. Label the place value positions and tell the value of each digit.</li></ol>