Focus Area ▸ Topic A: Place Value of Multi-Digit Whole Numbers

**Words to Know:**
- **Digit**: a numeral between 0 and 9
- **Place value**: the numerical value that a digit has by virtue of its position in a number
- **Bundling, renaming, regrouping, trading**: exchanging 10 ones for 1 ten, 10 tens for 1 hundred
- **Unbundling, renaming, regrouping, trading**: exchanging 1 ten for 10 ones, 1 hundred for 10 tens
- **Standard form**: a number written in the format: 135
- **Expanded form**: addition sentence with the value of each digit written out e.g., 100 + 30 + 5 = 135
- **Word form**: a number written out in words as in 135 → one hundred thirty-five

**Multiplication and Division with Place Value Charts**

Students will multiply multiple copies of one unit or more units by 10 and divide to reverse the process.

### 10 times as many as 3 tens is 30 tens or 3 hundreds

<table>
<thead>
<tr>
<th>hundred thousands</th>
<th>ten thousands</th>
<th>thousands</th>
<th>hundreds</th>
<th>tens</th>
<th>ones</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

10 x 3 tens = 30 tens = 3 hundreds

In the next example we will divide 20,000 by 10. We begin by drawing 2 dots to show our 2 ten thousands that make up our 20,000. Now we can unbundle each and show 20 dots in the thousands place. Since we are dividing by 10, we create 10 groups like this. In each group we have 2 dots or 2 thousands. So, 20 thousands divided by 10 is 2 thousand.

20,000 ÷ 10 = 2,000
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Multiplying and Dividing by 10

In this example we will multiply 40,020 by 10 using the place value chart. First we represent the number with 4 dots in the ten thousands place and 2 dots in the tens place.

When we multiply a number, we make copies. 1 x 10 = 10 so each dot will become 10 dots.

Now, we bundle our groups of ten and represent the bundle with 1 dot in the next place on the chart.

The reverse same strategy is used when dividing by 10 but it is used in reverse. Consider the next example.

Students will replace the dots with digits and use digits to represent values in a chart.

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Module 1: Place Value of Multi-Digit Whole Numbers

Place Value Charts

Students will use their understanding of place value to complete a chart similar to the one below.

<table>
<thead>
<tr>
<th>Expression</th>
<th>Unit Form</th>
<th>Standard Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 x 3 tens</td>
<td>30 tens</td>
<td>300</td>
</tr>
<tr>
<td>2 ten thousands ÷10</td>
<td>2 thousands</td>
<td>2,000</td>
</tr>
<tr>
<td>(4 ten thousands 2tens) x 10</td>
<td>4 hundred thousand 2 hundreds</td>
<td>400,200</td>
</tr>
<tr>
<td>(3 hundred thousands 5 tens) ÷10</td>
<td>3 ten thousands 5 ones</td>
<td>30,005</td>
</tr>
</tbody>
</table>

Students will extend knowledge of the place value chart to establish a repeating pattern of ones, tens, and hundreds. Students will use commas to separate the repeating units.

The standard form of the number represented on the chart is written as 809, 567, 123.

Students will extend the skill by writing the number in word and expanded forms.

Standard form: 80,235
Word form: eighty thousand, two hundred thirty-five
Expanded form: 80,000 + 200 + 30 + 5

If your child is having trouble reading and writing numbers, have him/her focus on one part of the number at a time. Remind him/her that the commas signal the end of that group of units so it needs a name.

Students will replace the dots with digits and use digits to represent values in a chart.

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