**Please use the resources on this page to review and practice math concepts learned throughout the year.**

**I highly recommend that you create a username and password for Learn Zillion. It is free and there are video lessons to help with every math standard. I link to those videos throughout this webpage.**

Place Value

<table>
<thead>
<tr>
<th>Place Value Vocabulary</th>
</tr>
</thead>
<tbody>
<tr>
<td>place value — the position of a digit in a number (ex. In 4.345, the 5 is in the thousandths place.) Place value is a word.</td>
</tr>
<tr>
<td>standard form — the most common way to write a number (ex. 435,678)</td>
</tr>
<tr>
<td>model — showing a number using base ten blocks, number lines, or another method.</td>
</tr>
<tr>
<td>tenths — one part in ten equal parts (ex. 1/10, 0.1)</td>
</tr>
<tr>
<td>greater than &gt; (ex. 5.5 is greater than 5.4; 5.5 &gt; 5.4)</td>
</tr>
</tbody>
</table>

Concepts:

**Decimal Place Value (position) and Value (worth)**

<table>
<thead>
<tr>
<th>Ones</th>
<th>Decimal (and)</th>
<th>tenths</th>
<th>hundredths</th>
<th>thousandths</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>•</td>
<td>3</td>
<td>2</td>
<td>5</td>
</tr>
</tbody>
</table>
The 4 is in the ones place. The value of the 4 is 4
The 3 is in the tenths place. The value of the 3 is 0.3
The 2 is in the hundredths place. The value of the 2 is 0.02
The 5 is in the thousandths place. The value of the 5 is 0.005

Video Lesson for place value of decimals:

Game to practice decimal place value:
• Paper Boy Place Value:
  http://www.sheppardsoftware.com/mathgames/decimals/scooterQuestDecimal.htm
• Pirate Place Value:
  http://mrnussbaum.com/placevaluepirates1/

Video Lesson for reading decimals:

Game for practice with reading decimals:
• Decimals of the Caribbean: http://mrnussbaum.com/doorb1/

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Standard form, word form, and expanded form:

<table>
<thead>
<tr>
<th>Standard Form</th>
<th>Expanded Form</th>
<th>Word Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.034</td>
<td>(3 x 0.01) + (4 x 0.001)</td>
<td>Thirty-four thousandths</td>
</tr>
<tr>
<td>5.67</td>
<td>(5 x 1) + (6 x 0.1) + (7 x 0.01)</td>
<td>Five and sixty-seven hundredths</td>
</tr>
</tbody>
</table>
8.9 | (8 x 1) + (9 x 0.1) | Eight and nine tenths

Writing Decimals in standard form: Standard form is the common way we write numbers. For example, five and twenty-three hundredths is 5.23 in standard form.

Writing Decimals in Expanded Form: In the past grades, expanded form has been simpler. For 456, you would write 400 + 50 + 6. In fifth grade, the complexity of expanded form changes. Each written value is broken down even further, adding in a multiplication component.

Now, 456 would look like this: (4 x 100) + (5 x 10) + (6 x 1)

Let’s look at a decimal number in 5th grade expanded form. For instance, 4.567 in expanded form could look like this:

(4 x 1) + (5 x 0.1) + (6 x 0.01) + (7 x 0.001)

or this: (4 x 1) + (5 x \( \frac{1}{10} \)) + (6 x \( \frac{1}{100} \)) + (7 x \( \frac{1}{1000} \))

- Video Lesson for expanded form:

Writing Decimals in Word Form: When you write a decimal number in word form you simply read the decimal and write what you say. For example, if I see the decimal 5.673, I would read the decimal to myself, remembering that I say “and” when I come to the decimal point, and write what I say. 5.673 in word form would be five and six hundred seventy-three thousandths.
Modeling Decimals with Base-ten Blocks: You can model decimals using base-ten blocks. Here is how:

If we are modeling a decimal that only goes to the tenths or hundredths place (ex. 4.5 or 4.56), we can use the hundreds block (“flat”), the tens rod (“long”), and the ones cubes.

![Diagram of base-ten blocks]

<table>
<thead>
<tr>
<th>Flat:</th>
<th>Long:</th>
<th>Small Cubes:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 whole</td>
<td>1 tenth</td>
<td>1 hundredth</td>
</tr>
<tr>
<td>1</td>
<td>0.1 or 1/10</td>
<td>0.01 or 1/100</td>
</tr>
</tbody>
</table>

If we are modeling a decimal that goes to the thousandths place, the base ten blocks would represent different values. To represent one whole, we would use the large cube as one whole, the “flat” as one tenth, the “long” as one hundredth, and the small cube as one thousandth.

<table>
<thead>
<tr>
<th>Decimal</th>
<th>Representation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.24</td>
<td>Flat: 1 whole, Long: 1 tenth, Small Cubes: 2, 4</td>
</tr>
<tr>
<td>3.6</td>
<td>Flat: 3 wholes, Long: 3 tens</td>
</tr>
<tr>
<td>0.75</td>
<td>Small Cubes: 7, 5</td>
</tr>
<tr>
<td>Large Cube:</td>
<td>Flat:</td>
</tr>
<tr>
<td>------------</td>
<td>-------</td>
</tr>
<tr>
<td>1 whole</td>
<td>1 tenth</td>
</tr>
<tr>
<td>1</td>
<td>0.1 or 1/10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number</th>
<th>Large Cube</th>
<th>Flat</th>
<th>Long</th>
<th>Small Cube</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.456</td>
<td><img src="image1" alt="Large Cube" /></td>
<td><img src="image2" alt="Flat" /></td>
<td><img src="image3" alt="Long" /></td>
<td><img src="image4" alt="Small Cube" /></td>
</tr>
<tr>
<td>0.870</td>
<td><img src="image5" alt="Large Cube" /></td>
<td><img src="image6" alt="Flat" /></td>
<td><img src="image7" alt="Long" /></td>
<td><img src="image8" alt="Small Cube" /></td>
</tr>
<tr>
<td>1.003</td>
<td><img src="image9" alt="Large Cube" /></td>
<td><img src="image10" alt="Flat" /></td>
<td><img src="image11" alt="Long" /></td>
<td><img src="image12" alt="Small Cube" /></td>
</tr>
</tbody>
</table>

- **Video Lesson for Decimal Models:**

- **Games/Practice for practicing decimal models:**
  - Decimals to Tenths Place:
  - Decimals to Hundredths Place:
  - Decimals to Thousandths Place:
Model the following decimals using base ten blocks on paper:
6.678

1.340

2.522

Showing Decimals on a Number Line: Decimals can be placed on a number line just like whole numbers. For example, 1.5 would fall here on the number line:

1.55 would fall here:

- Video lesson for placing decimals on a number line:

- Game for placing decimals on number line:
  http://www.sheppardsoftware.com/mathgames/decimals/mathman_decimal_numberline.htm

Comparing Decimals:
You can compare two decimals using the symbols > (greater than), < (less than), and = (equal to). There are several ways to compare decimals.
1. Compare decimals using fractions: When we read decimals, what we say sounds like a fraction. For example, 0.3 is three tenths, or $3/10$. If we convert both decimals we are comparing to fractions, we can easily compare them.

For example: Compare: $0.9 \quad \text{ > } \quad 0.8$

\[
\begin{array}{c}
\frac{9}{10} \\
\frac{8}{10}
\end{array}
\]

- Practice for Comparing Decimals using fractions:
  - Compare the following:
    - $1.19 \quad \text{ < } \quad 1.11$
    - $0.344 \quad \text{ < } \quad 0.034$

2. Comparing Decimals Using a Number Line: We can also compare decimals by placing them on a number line and visually comparing their positions. Watch the following video lesson to see how.


3. Comparing Decimals Using Base ten Blocks: We can also compare decimals by looking at the models we create with base ten blocks. For example, let’s compare 0.04 and 0.045 using models.

\[
0.04 \quad \text{ < } \quad 0.045
\]
4. Tricks for quickly comparing decimals: Now that you have an understanding of the strategies you can use to compare decimals, here are some quick ways:

- “Balancing out” the numbers – It can look difficult when having to compare decimals that go to different place values. For example, you might be asked to compare 1.45 and 1.451. To easily compare these decimals, you can make them look similar by adding a zero to the end of the decimal with fewer places.

\[
1.450 < 1.451
\]

Adding a zero will not change the value of the decimal because 45/100 is the same amount as 450/1000. Now both decimals look similar, and you can easily tell that four hundred fifty thousandths is less than four hundred fifty-one thousandths.

- “Cross-out Method” – this method can be useful when comparing decimals or whole numbers. In this method, you examine each place value carefully and cross out the place values that match from left to right. For example, let’s compare 0.009 and 0.09.

\[
0.009 < 0.09
\]
If we cross out the matching place values first, we would cross out the ones place on both numbers because they are both zero, and the tens place on both numbers because they are both zero. Now we are looking at a zero in the hundredths place of the first number, and a nine in the hundredths place of the second number. Since zero hundredths is less than nine hundredths, 0.009 is less than 0.09.

- Game for Comparing Decimals:
  http://www.sheppardsoftware.com/mathgames/decimals/CompareDecimals.htm

Ordering Decimals:
Once you have learned how to compare decimals, you can put them in order from least to greatest or from greatest to least as well. Watch the following videos to see how to order decimals:

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Rounding Decimals to Any Place:
You may be asked to round a decimal number to the nearest whole number, to the nearest tenth, to the nearest hundredth, or to the nearest thousandth.

You can round decimal numbers by using a number line. Click on the following links to see how to round decimals using a number line:
• Round decimals to the nearest whole number:
  https://learnzillion.com/lessons/3430-round-decimals-to-the-nearest-whole-number
• Round decimals to the nearest tenth:
• Round decimals to the nearest hundredth:
• Round decimals to the nearest thousandth, or any other place:
  https://learnzillion.com/lessons/3522-round-decimals-to-any-place

You may also use another strategy to round decimals. For example, let’s round 3.456 to the nearest tenth.
Step one: Underline the place you are rounding to    3.456
Step two: Circle the place to the right of the underlined place    3.456
Step three: If the circled number is 4 or less, then the underlined number stays the same. If the circled number is 5 or more, then the underlined number increases by one.    3.456
Step four: The numbers to the right of the underlined number change to zeros, and the numbers to the left of the underlined number stay the same. Answer: 3.500 or 3.5

• Games for Rounding Decimals:
  http://www.sheppardsoftware.com/mathgames/decimals/scooterQuestDecRound.htm
Volume

<table>
<thead>
<tr>
<th>Volume Vocabulary</th>
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<tbody>
<tr>
<td>volume – the amount of 3-dimensional space an object occupies</td>
</tr>
<tr>
<td>solid figure – a 3-dimensional object (ex. cube, pyramid, rectangular prism, sphere, cylinder, etc.)</td>
</tr>
<tr>
<td>unit cube – a cube whose sides are one unit long</td>
</tr>
<tr>
<td>cubic units – a unit to measure volume</td>
</tr>
<tr>
<td>area of base – the area of a solid figure’s base (L x W)</td>
</tr>
</tbody>
</table>

By the end of this unit, students should be able to recognize volume as an attribute of solid figures and measure the volume of right rectangular prisms using unit cubes and the formula for volume.

Videos to help explain concepts of volume:

- Identifying the parts of 3D figures
- Difference between a square unit and a cubic unit
- Understanding volume
- Finding volume by counting cubes
- Finding volume by multiplying the area of the base by the height
Finding volume using the formula length x width x height (L x W x H)

Finding edge lengths that aren’t labeled

Decomposing irregular 3D figures to find the volume

Games/Activities to practice concepts of volume:

Measuring volume by counting cubic units

Finding the volume of rectangular prisms (practice sheets)