Dear Parents,
We will begin our next unit of study in math soon. The information below will serve as an overview of the unit as you work to support your child at home. If you have any questions, please feel free to contact me. I appreciate your ongoing support.

Sincerely,
Your Child's Teacher

## Unit Name: Connect to Decimal Notation

## North Carolina Content State Standards:

**NC.4.NF.6** Use decimal notation to represent fractions.

- Express, model and explain the equivalence between fractions with denominators of 10 and 100.
- Use equivalent fractions to add two fractions with denominators of 10 or 100.
- Represent tenths and hundredths with models, making connections between fraction and decimals.

**NC.4.NF.7** Compare two decimals to hundredths by reasoning about their size using area and length models, and recording the results of comparisons with the symbols >, =, or <. Recognize that comparisons are valid only when the two decimals refer to the same whole.

## Math Language:

- Decimal Point
- Decimal
- Denominator
- Meter
- Area Model
- Tenths
- Equivalent
- Whole
- Compare
- Greater Than
- Hundredths
- Place Value
- Base Ten System
- Reason
- Less Than
- Fraction
- Numerator
- Number Line
- Equations
- Equal to (same value as)

## Unit Overview:

In this unit, students will apply their understanding of fractions to help them understand decimal equivalence. Decimals are introduced for the first time in 4th grade. Students will express quantities of tenths and hundredths using both fraction and decimal notation. Students will use this knowledge to explain the equivalence between fractions with denominators of 10 and 100, add two fractions with denominators of 10 and 100, and compare two decimals by reasoning about their size. Students gain a *conceptual understanding* of decimal place values and their connection to decimal fractions, and use this understanding to compare and add both decimals and decimal fractions. Students build *fluency* with reading and writing decimals to the hundredths place, while using concrete models (number line, decimal grid models, tenths/hundredths circles) for justification. Real world *application* of decimals, including measurement and money contexts, will be used throughout the unit.

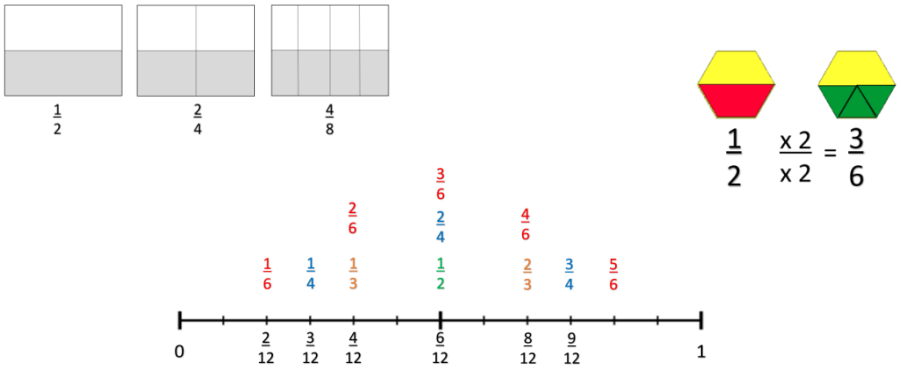
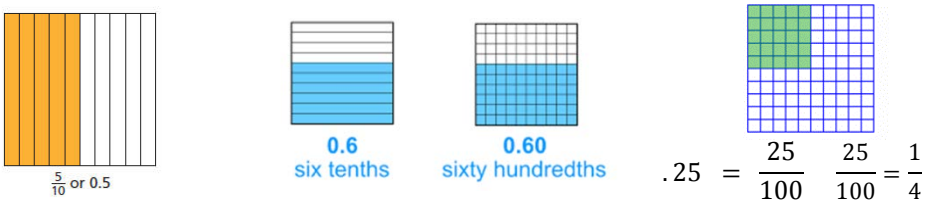
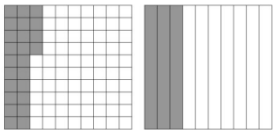
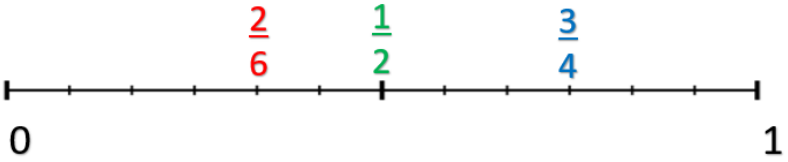
## Skills/Strategies:

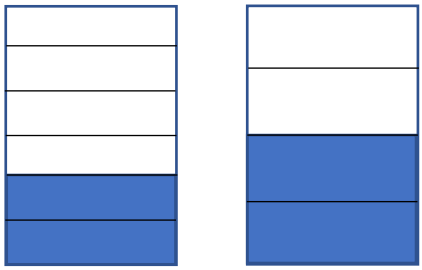
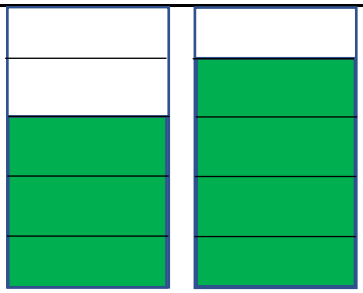
Students will be able to:

- Add two fractions with denominators of 10 or 100 using equivalency
- Use precise language to describe decimals
- Use models to verify equivalence (ex: use number line to show fraction on top and decimal notation on bottom) and to express equivalence between fraction and decimal form (e.g. 3/10 = 0.3)
- Use decimal notation in reference to the number line and decimal grid models to solve problems and communicate their thinking
- Reason about the size of decimals based on place value understanding

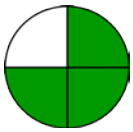
- Compare decimal numbers using area and length models, (including number lines, decimal circles/grids, meter sticks), benchmark numbers, and/or understanding of equivalence, to compare and order decimals
- Use greater than, less than, and equal symbols to record decimal comparisons

**Examples of Strategies:**

| Strategies | Examples |
|---|---|
| Students will use models to determine equivalent fractions. By using a variety of models, students begin to see the relationship between numerators and denominators in equivalent fractions. |  |
| Students will use models to show how decimals and fractions are related. |  |
| Students reason about the size of fractions and decimals, using models in order to compare them. | Which is larger, 2/3 or 7/8?<br>  <br>"When comparing 2/3 and 7/8, I can think about how in both fractions, the numerator is one piece away from the denominator. 2/3 is 1/3 away from a whole. 7/8 is 1/8 away from a whole. In my model, I can see that even though both fractions only need one piece to make a whole, it is the size of the missing pieces that helps me to know which fraction is larger. 1/3 is larger than 1/8, so it is further away from a whole."<br>Which is greater, .24 or .3?<br>  <br>.24 < .3 |
| Students will use benchmark numbers of 0, ½, and 1 to compare numbers. | Which is larger, 3/4 or 2/6?<br>  <br>"I know that 3/4 is larger than 2/4, which is equivalent to 1/2. I know that 3/6 is also equivalent to 1/2 and 2/6 is smaller than 3/6. So, 3/4 has to be bigger than 2/6." |

| | | |
|---|---|---|
| Students will compare fractions using visual models to find common numerators and common denominators. |  <br>Compare 2/6 and 2/4.<br>"In this situation, both numerators are 2, so I have to think of the size of the pieces. Sixths are smaller than fourths. Since I have the same number of pieces, I know that two of the fourths will take up more space in my whole than two of the sixths." |  <br>Compare 3/5 and 4/5.<br>"In this situation, both denominators are 5, so I know the pieces are the same size. To find the bigger fraction, all I have to do is figure out which numerator is larger, because the numerator tells me how many of each piece I have. So, 4/5 is bigger than 3/5." |
| By decomposing larger fractions into smaller fractions, students develop conceptual understanding and flexibility in their thinking in order to add and subtract. | $1\frac{2}{3}+\frac{2}{3}$<br>$\frac{3}{3}+\frac{2}{3}+\frac{2}{3}=\frac{7}{3}$ | |

**Important Vocabulary:**




**Numerator**- The top number in a fraction that represents how many parts of a whole are being considered.

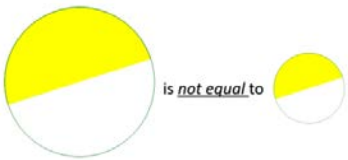
**Denominator**- The bottom number in a fraction that tells the total number of parts in the whole.

**Equivalent**- Fractions that have the same value.


**Common Student Misconceptions:**

Students often think that the equal-sized pieces must look the same. When given models like these, students do not think the fractional parts are equivalent, when, in fact, they are.

Students often do not consider the size of the whole when dealing with fractions. All halves are not equivalent! The size of the whole determines the size of the fraction.



| | |
|---|---|
| $\frac{3}{10} + \frac{2}{10} \neq \frac{5}{20}$ | When adding fractions, students will add both the numerators and the denominators, forgetting that the denominator only indicates the size of the pieces, not the number of pieces that need to be added. |

## Video Support:

Video Support:
Video support can be found on LearnZillion http://learnzillion.com

- Convert decimals to fractions to the tenths place using number line
- Convert decimals to fractions to the hundredths place
- Convert fractions to decimals to the hundredths place using visual aids
- Compare two decimals to the hundredths place using fraction models

## Additional Resources:

- NCDPI Additional Resources

## Questions to Ask When Helping Your Child with Math Homework

Keep in mind that homework in elementary schools is designed as practice. If your child is having problems, please let the classroom teacher know. When helping your child with his/her math homework, you don't have to know all the answers! Instead, we encourage you to ask probing questions so your child can work through the challenges independently. Some examples may include the following:

- What is the problem you're working on?
- What do the directions say?
- What do you already know that can help you solve the problem?
- What have you done so far and where are you stuck?
- Where can we find help in your notes?
- Are there manipulatives, pictures, or models that would help?
- Can you explain what you did in class today?
- Did your teacher work examples that you could use?
- Can you go onto another problem & come back to this one later?
- Can you mark this problem so you can ask the teacher for an explanation tomorrow?