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: Extend the Understandings of Fractions

North Carolina Content State Standards:

NC.4.NF.1 Explain why a fraction is equivalent to another fraction by using area and length fraction models, with attention to how the numbers and size of the parts differ even though the two fractions themselves are the same size.

NC.4.NF..2 Compare two fractions with different numerators and different denominators, using the denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or < and justify the conclusions by:

- reasoning about their size and using area and length models
- using benchmark fractions 0, ½, and a whole comparing common numerator or common denominators

Math Language:

- Equivalent
- Denominator
- Partition
- Number Line
- Equal to
- Column
- Benchmark Fractions
- Equal Parts
- Equal Shares
- Equivalent Fraction
- Compare
- Value
- Decimal Fraction
- Fraction
- Whole
- Visual Fraction Model
- Greater Than
- Order
- Decimal Point
- Numerator
- Unit Fraction
- Tape Diagram
- Less Than
- Row
- Area Model

Unit Overview:

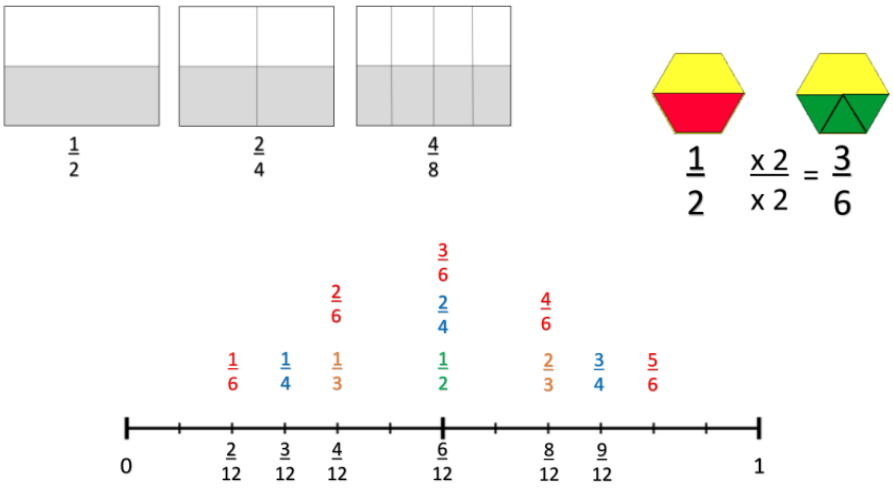
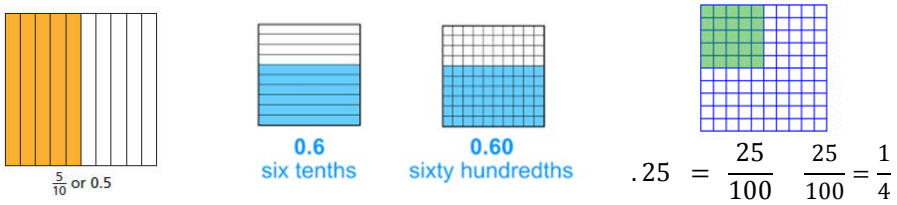
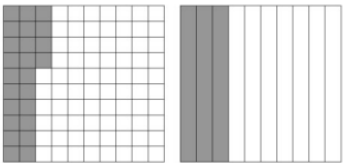
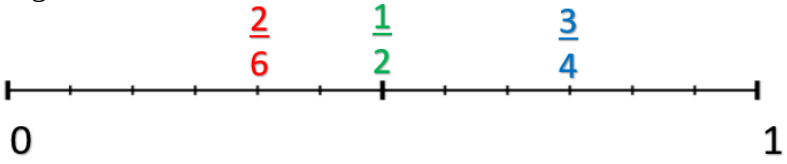
In this unit, students will develop a **conceptual understanding** of fraction size in order to compare and determine equivalence. Students will develop multiple strategies and use multiple models (area models, number lines, and/or a tape diagrams to explain why a fraction is equivalent with attention to how the number and size of parts differ even though the amounts themselves are the same. They compare and order fractions through reasoning about the size of fractions using benchmark fractions, models, and/or the use of equivalent fractions. Students will create their own drawings when working on tasks to help develop a solid understanding of fractions. **Application** through real-world situations with fractions should be incorporated throughout the unit. Work is limited to the denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.

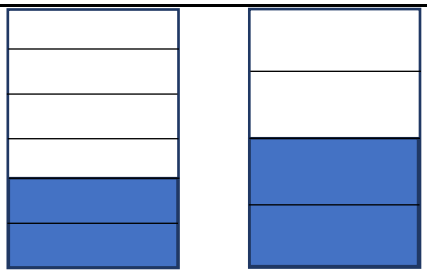
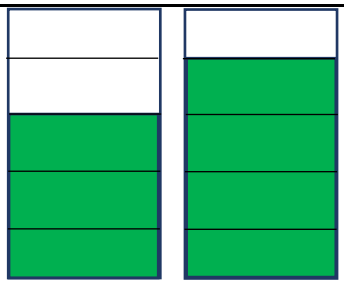
Skills/Strategies:

Students will be able to:

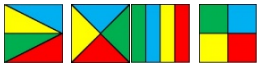
- Create area, length, and number line models to compare two fractions
- Record comparisons of fractions using the <,>,= symbols
- Reason about the size of fractions using area and length models when making comparisons
- Compare two fractions with common numerators and common denominators

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?  "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." Which is greater, .24 or .3? 
Students will use benchmark numbers of 0, ½, and 1 to compare numbers.	Which is larger, 3/4 or 2/6?  "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."

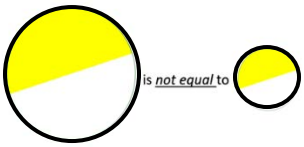
Students will compare fractions using common numerators and common denominators.	 Compare 2/6 and 2/4. "In this situation, both numerators are 2, so I have to think of the size of the pieces. Sixths are smaller than fourths. Since I have the same number of pieces, I know that two of the fourths will take up more space in my whole than two of the sixths."	 Compare 3/5 and 4/5. "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 flexibility in their thinking in order to add and subtract.	$1\frac{2}{3}+\frac{2}{3}$ $\frac{3}{3}+\frac{2}{3}+\frac{2}{3}=\frac{7}{3}$	

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.



Video Support:

Video support can be found on The WCPSS Academics YouTube Channel.

- http://tinyurl.com/WCPSSAcademicsYouTube
- Finding Equivalent Fractions Using Visual Fraction Models
- Comparing Fractions 1 Using Visual Fraction Models
- Comparing Fractions 2 Using Benchmark Fractions

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

- Recognize equivalent fractions using area models
  - https://learnzillion.com/lesson_plans/9049-recognize-equivalent-fractions-using-area-models/
- Recognize equivalent fractions using number lines

- https://learnzillion.com/lesson_plans/4739-recognize-equivalent-fractions-using-number-lines/
- Compare fractions using the benchmark fraction ½
  - https://learnzillion.com/lesson_plans/5115-compare-fractions-to-a-benchmark-of-one-half-using-number-lines/

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?