Pacing: 4 weeks (plus 1 week for reteaching/enrichment)

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| **Mathematical Practices** |
| *Mathematical Practices #1 and #3* *describe a classroom environment that encourages thinking mathematically and are critical for quality teaching and learning.*  *Practices in bold are to be emphasized in the unit.*  **1. Make sense of problems and persevere in solving them.**  **2. Reason abstractly and quantitatively.**  **3. Construct viable arguments and critique the reasoning of others.**  4. Model with mathematics.  **5. Use appropriate tools strategically.**  6. Attend to precision.  **7. Look for and make use of structure.**  **8. Look for and express regularity in repeated reasoning.** |

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| **Domain and Standards Overview** |
| **Number and Operations—Fractions**  **•** Extend understanding of fraction equivalence and ordering.  • Understand decimal notation for fractions, and compare decimal fractions. |

| **Priority and** Supporting **CCSS** | **Explanations and Examples\*** |
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| **4.NF.1. Explain why a fraction *a*/*b* is equivalent to a fraction (*n* × *a*)/(*n* × *b*) by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions** | **4.NF.1.** This standard extends the work in third grade by using additional denominators (5, 10, 12, and 100).  [Grade 3 expectations are limited to fractions  with denominators of 2, 3, 4, 6, and 8.]  Students can use visual models or applets to generate equivalent fractions.  All the models show 1/2. The second model shows 2/4 but also shows that 1/2 and 2/4 are equivalent fractions because their areas are equivalent. When a horizontal line is drawn through the center of the model, the number of equal parts doubles and size of the parts is halved.  Students will begin to notice connections between the models and fractions in the way both the parts and wholes are counted and begin to generate a rule for writing equivalent fractions.    1/2 x 2/2 = 2/4.      Technology Connection: http://illuminations.nctm.org/activitydetail.aspx?id=80 |
| 4.NF.2. Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators or by comparing to a benchmark fraction such as 1/2. 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, e.g., by using a visual fraction model. | 4.NF.2.Benchmark fractions include common fractions between 0 and 1 such as halves, thirds, fourths, fifths, sixths, eighths, tenths, twelfths, and hundredths.  Fractions can be compared using benchmarks, common denominators, or common numerators. Symbols used to describe comparisons include <, >, =.  Fractions may be compared using ½ as a benchmark.    Possible student thinking by using benchmarks:  is smaller than because when 1 whole is cut into pieces, the pieces are much smaller than when 1 whole is cut into 2 pieces.  Possible student thinking by creating common denominators:  Fractions with common denominators may be compared using the numerators as a guide:  <  <  Fractions with common numerators may be compared and ordered using the denominators as a guide:  < < |
| **4.NF.7. Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual model.** | **4.NF.7** Students build area and other models to compare decimals. Through these experiences and their work with fraction models, they build the understanding that comparisons between decimals or fractions are only valid when the whole is the same for both cases. Each of the models below shows 3/10 but the whole on the right is much bigger than the whole on the left. They are both 3/10 but the model on the right is a much larger quantity than the model on the left.  When the wholes are the same, the decimals or fractions can be compared.  Example:  • Draw a model to show that 0.3 < 0.5. (Students would sketch two models of approximately the same size to show the area that represents three-tenths is smaller than the area that represents five-tenths. |
| 4.NF.5. Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100. **4** *For example, express 3/10 as 30/100, and add 3/10 + 4/100 = 34/100.*  **4** Students who can generate equivalent fractions can develop strategies for adding fractions with unlike denominators in general; but addition and subtraction with unlike denominators in general is not a requirement of this grade. | 4.NF.5. Students can use base ten blocks, graph paper, and other place value models to explore the relationship between fractions with denominators of 10 and denominators of 100.  Students may represent 3/10 with 3 longs and may also write the fraction as 30/100 with the whole in this case being the flat (the flat represents one hundred units with each unit equal to one hundredth). Students begin to make connections to the place value chart as shown in 4.NF.6.  This work in fourth grade lays the foundation for performing operations with decimal numbers in fifth grade. |
| 4.NF.6. Use decimal notation for fractions with denominators 10 or 100. *For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram.* | 4.NF.6. Students make connections between fractions with denominators of 10 and 100 and the place value chart. By reading fraction names, students say 32/100 as thirty-two hundredths and rewrite this as 0.32 or represent it on a place value model as shown below.   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | Hundreds | Tens | Ones | • | Tenths | Hundredths | |  |  |  | • | 3 | 2 |   Students use the representations explored in 4.NF.5 to understand 32/100 can be expanded to 3/10 and 2/100.  Students represent values such as 0.32 or 32/100 on a number line. 32/100 is more than 30/100 (or 3/10) and less than 40/100 (or 4/10). It is closer to 30/100 so it would be placed on the number line near that value. |

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| **Concepts**  **What Students Need to Know** | **Skills**  **What Students Need To Be Able To Do** | **Bloom’s Taxonomy Levels** |
| Fractions  Equivalent Fractions  Decimals | COMPARE (with different numerators and denominators)  RECOGNIZE (comparisons when both refer to the same whole)  RECORD (using symbols >, =, <)  JUSTIFY (conclusions using visual model)  ADD (with different denominators of 10 and 100)  USE (decimal notation for denominators of 10 or 100)  EXPLAIN (using visual models)  RECOGNIZE  GENERATE  EXPRESS (with denominators of 10 and 100)  COMPARE (to hundredths)  RECOGNIZE (comparisons are only valid when referring to same whole)  RECORD (using symbols >, =, <)  JUSTIFY (conclusions using visual model) | 4  2  2  5  3  3  2  2  3  3  4  2  2  5 |

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| **Essential Questions** |
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| **Corresponding Big Ideas** |
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| **Standardized Assessment Correlations (State, College and Career)** |
| **Expectations for Learning (in development)**  This information will be included as it is developed at the national level. CT is a governing member of the Smarter Balanced Assessment Consortium (SBAC) and has input into the development of the assessment. |

| **Unit Assessments:**  **The items developed for this section can be used during the course of instruction when deemed appropriate by the teacher.** |
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| **1. Is  greater than or less than? Use numbers, words or pictures to explain your answer.**  Answer: is greater than, with an explanation that may include the use of benchmarks, common denominators or common denominators. For example, using a number line is locatedto the right of and is located to the left.  Partial Credit: Correct answer,is greater than, with an incorrect or missing explanation, OR an incorrect answer with an explanation that demonstrates understanding of comparing fractions.  No Credit: Incorrect answer with an incorrect or missing explanation. |
| **2. Which of the following are true? Choose yes or no for A - D**   1. <  O Yes O No 2. >  O Yes O No 3. =  O Yes O No 4. > O Yes O No   Answer: NYNY |
| **3. Write these fractions in the correct box to make the expression true.**    < < <    Answer:  <  < < |
| **3. Which fraction is the smallest?**     3. \* |
| **4. The table below shows the distances Shelly ran on three days .**   |  |  | | --- | --- | | **Day** | **Number of Miles** | | Monday | miles | | Tuesday | miles | | Wednesday | miles |   **On which day did Shelly run the greatest number of miles? Show how you know which distance is the greatest.**  Answer: Monday ( miles), with an explanation that may include the use of benchmarks, common denominators or common numerators. For example, and are both less than  and  is the only fraction greater than , OR the student can uses equivalent fractions with common denominators, OR represent the fractions with drawings or pictures to compare the fractions.  Partial Credit: Correct answer, Monday ( miles), with an incorrect or missing explanation, OR an incorrect answer with an explanation that demonstrates understanding of comparing fractions.  No Credit: Incorrect answer with an incorrect or missing explanation. |
| **5. Which shape has a shaded area that is equal to  ?**   1. Circle, 1/2 Fraction 2. Fraction Pie Divided into Eighths 3. Fraction Pie Divided into Twelfths 4. Fraction Pie Divided into Eighths**\*** |
| **7. Ryan picked 6 of the flowers shown below.**  flowers  **Which of the following show two fractions that equal the fractional part of the group of flowers Ryan picked?**   1. and **\*** 2. and 3. and 4. and |
| **8. Look at the shaded part of the first shape. What fractional part of the shape is shaded? Shade the second shape to show an equivalent fraction. What fractional part of the second shape is shaded?**  **\_\_\_\_\_\_ \_\_\_\_\_\_\_**  Answer: and an equivalent fraction shown as the shaded part of the second shape with the fraction written below the shape.  Partial Credit: Correct answer, and an equivalent fraction, with an incorrect or missing explanation, OR an incorrect answer with an explanation that demonstrates understanding of equivalent fractions.  No Credit: Incorrect answer with an incorrect or missing explanation. |
| **9. Which fraction is equal to  ?**    2. **\*** |
| **10.  +  = \_\_\_\_\_\_\_\_\_\_ Show or explain how you found your answer.**  Answer: with an explanation that may include changing using a model to change to an equivalent fraction and adding this to **.**  Partial Credit: Correct answer,, with an incorrect or missing explanation, OR an incorrect answer with an explanation that demonstrates understanding of using equivalent fractions to add fractions with different denominators.  No Credit: Incorrect answer with an incorrect or missing explanation. |
| **11.** + **= Show the answer by shading the area model below.**     |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |       Key: =  Answer:  and two rows and 3 individual squares shaded. |
| **12. What decimal is shown by the shaded part of the shape below?**  Decimal Fraction (2)  Answer: 0.2 |
| **13. Which letter on the number line marks the location of 1.4?**  Answer: C |
| **14. Which letter on the number line best represents 1.75?**    Answer: D |
| **15. What fraction is equal to 0.52?**  Answer: Answers may vary. Any fraction equal to |
| **16. Choose true or false for A - D**   1. 0.26 > 0.23 O True O False 2. 0.3 < 0.35 O True O False 3. 0.42 > 0.51 O True O False 4. 0.55 < 0.6 O True O False   Answer: TTFT |
| **17. Which number makes this true?**  **26.54 < \_\_\_\_\_**   1. 26.4 2. 26.5 3. 26.39 4. 26.57\* |
| **18. Choose true or false for A - D**   1. 26.4 < 26.37 O True O False 2. 36.7 < 36.73 O True O False 3. 0.2 > 0.13 O True O False 4. 45.26 > 45.06 O True O False   Answer: FTTT |
| **Which number makes this true? Choose yes or no for A - D**  **\_\_\_\_\_ > 158.7**   1. 158.88O Yes O No 2. 158.8 O Yes O No 3. 158.71 O Yes O No 4. 158.7 O Yes O No   YYYN |