

Grade 4

Unit 2.4	Unit Title Developing an Understanding of Fractions (limited to fractions with denominators 2,3,4,5,6,8,10,12,100)	Lesson 1 of	Day 1 - 2
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Lesson Focus

1. Standards Addressed	2. Content to be Learned	3. Mathematical Practices	4. Essential Question
4.NF.1 Explain why a fraction a/b is equivalent to a fraction $(nxa)/(nxb)$ 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.	<ul style="list-style-type: none"> •Use models to show equivalent fractions. •Use the Identity Property of Multiplication, by multiplying a given fraction by 1 in the form n/n to generate equivalent fractions. •Understand why a fraction is equivalent. 	<p>SMP2 Reason abstractly and quantitatively.</p> <p>SMP3 Construct viable arguments and critique the reasoning of others.</p> <p>SMP7 Look for and make use of structure.</p>	<ul style="list-style-type: none"> •How can you use models to show equivalent fractions? •How can you use multiplication (Identity Property) to find equivalent fractions?
5. Prerequisite Knowledge	6. Essential Vocabulary	7. Possible Misconceptions	8. Necessary Materials
<ul style="list-style-type: none"> •Model a fraction as part of a whole that is divided into equal parts. •Multiply within 100. 	Identity property of Multiplication Equivalent fractions Area model	<ul style="list-style-type: none"> •Representation of the whole not being the same size. •Not using equal sized parts. 	OnCore Lesson 47 & 48 Student pages 93 – 96 Investigations Unit 6 Session 1.2 <i>Relationship between halves and fourths, thirds and sixths.</i>

Instruction

9. Instruction Practices (What are the teachers doing)	10. Learning Practices (What are the students doing)
Teachers will guide students in their explanation of why a fraction a/b is equivalent to a fraction $(nxa)/(nxb)$, <i>Identity Property of Multiplication</i> , using visual fraction models. They will help students understand that even when the number and size of the parts differ the two fractions may be the same (equivalent), if the fractions both relate to the same whole. Teachers will utilize OnCore lessons 47 & 48. They may find the Investigations material a good starting point.	Students will understand that when you multiply any fraction by any form of 1 (n/n) it will result in an equivalent fraction. They will be using the <i>Identity Property of Multiplication</i> , but they are not expected to know this property by name. Students will recognize that even when the number and size of the parts differ the two fractions may be the same (equivalent), if the fractions both relate to the same whole. They will practice this concept using OnCore pages 93 – 96, along with SAB pages from Investigations if needed.

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Unit 2.4	Unit Title Developing an Understanding of Fractions (limited to fractions with denominators 2,3,4,5,6,8,10,12,100)	Lesson 2 of	Day 3 - 5
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Lesson Focus

1. Standards Addressed	2. Content to be Learned	3. Mathematical Practices	4. Essential Question
<p>.NF.1 Explain why a fraction a/b is equivalent to a fraction $(nxa)/(nxb)$ 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.</p>	<ul style="list-style-type: none"> •Write and identify equivalent fractions in simplest form. •Use equivalent fractions to represent a pair of fractions with a common denominator. •Use the strategy <i>make a table</i> to solve problems using equivalent fractions. •Identify fractions and their equivalence on a number line. 	<p>SMP2 Reason abstractly and quantitatively.</p> <p>SMP6 Attend to precision.</p> <p>SMP7 Look for and make use of structure.</p>	<ul style="list-style-type: none"> •How can you write a fraction as an equivalent fraction in simplest form? •How can you write a pair of fractions with a common denominator? •How can you use the strategy <i>make a table</i> to help you solve problems with equivalent fractions? •How can a number line be used to show equivalent fractions?
5. Prerequisite Knowledge	6. Essential Vocabulary	7. Possible Misconceptions	8. Necessary Materials
<ul style="list-style-type: none"> •Identify common factors of two whole numbers. •Find multiples of a number. •Write equivalent fractions. 	<p>Equivalent fractions Numerator, denominator Common denominator Factor, common factor Multiple, common multiple Simplest form</p>	<ul style="list-style-type: none"> •Not recognizing another common factor of the numerator and denominator. (Thinking the fraction is in simplest form.) •Misinterpreting the problem solving tasks in Lesson 51; errors in table. 	<p>OnCore Lessons 49 – 51 Student pages 97 – 102 EnVision 10-5A Common Core Student pages & activities K-5 Math Resources Fraction Wall Game</p>

Instruction

9. Instruction Practices (What are the teachers doing)	10. Learning Practices (What are the students doing)
<p>Teachers will guide students to write and identify fractions in simplest form (Lesson 49), represent a pair of fractions with common denominators (Lesson 50) and use the strategy <i>make a table</i> to solve problems using equivalent fractions (Lesson 51). Teachers may use the EnVision pages from Unit 10-5A to teach understanding of equivalent fractions using number lines or the K-5 Math Resources Fraction Wall Game. The Fraction Wall could be reproduced with students out of rectangular foam sheets (See Sample). These could be kept in student’s desks to refer to in the future.</p>	<p>Students will write and identify fractions in simplest form, represent pairs of fractions with common denominators and use the strategy <i>make a table</i> to solve problems using equivalent fractions using the OnCore Lessons. They may practice working with equivalent fractions using number lines with the EnVision student pages or play the Fraction Wall Game from the K-5 Math Resources to continue to develop their understanding of equivalent fractions. Students may construct a fraction wall out of foam sheets to use with future problem solving tasks.</p>

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Unit 2.4	Unit Title Developing an Understanding of Fractions (limited to fractions with denominators 2,3,4,5,6,8,10,12,100)	Lesson 3 of	Day 6 - 8
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Lesson Focus

1. Standards Addressed	2. Content to be Learned	3. Mathematical Practices	4. Essential Question
<p>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 $\frac{1}{2}$. Recognize the results of comparisons with symbols $>$, $=$, or $<$, and justify the conclusion, e.g. by using a visual model.</p>	<ul style="list-style-type: none"> •Using benchmarks to compare fractions. •Compare fractions by writing them with a common numerator. •Compare fractions by writing them with a common denominator. •Justify comparisons using a visual model and record using symbols $>$, $=$, or $<$. 	<p>SMP3 Construct viable arguments and critique the reasoning of others.</p> <p>SMP5 Use appropriate tools strategically.</p> <p>SMP6 Attend to precision.</p>	<ul style="list-style-type: none"> •How can you use benchmarks to compare fractions? •How do you compare fractions with common numerators? Common denominators? •Show me how you can justify your comparison using a visual model.
5. Prerequisite Knowledge	6. Essential Vocabulary	7. Possible Misconceptions	8. Necessary Materials
<ul style="list-style-type: none"> •Compare numbers using the symbols $>$, $=$, $<$. •Model a fraction as part of a whole. •Write an equivalent fraction. •Understand that when comparing unit fractions the larger the denominator, the smaller the fractions. 	<p>Common numerators Common denominator Symbols: $>$, $=$, $<$ Benchmark</p>	<ul style="list-style-type: none"> •Misinterpreting the fraction. •Not understanding how to compare fractions with common numerators. •Forgetting to find a common denominator, just looking at the numbers as a whole number and comparing because one number is larger than the other. For example, $\frac{4}{12} > \frac{1}{3}$ because $4 > 1$ 	<p>OnCore Lesson 52 - 53 Student pages 103 -106</p> <p>Investigations Unit 6 Session 2 <i>Game:</i> Capture Fractions</p> <p>K-5 Math Resources</p> <p>Birthday Fractions</p> <p>Pattern Block Fractions</p> <p>Who Ate More?</p> <p>Fraction Compare</p> <p>Fraction Cards</p> <p>Which is Larger?</p> <p>Snack Time</p>

Instruction

9. Instruction Practices (What are the teachers doing)

Teachers will guide students to compare fractions using benchmarks (lesson 52) fractions (e.g., $\frac{1}{2}$) and by rewriting the fractions that are being compared with common numerators or common denominators (Lesson 53) They will encourage students to justify their comparisons using visual models and to record the results of their comparisons using the symbols $>$, $=$, or $<$. Teachers may utilize Investigations Unit 6 Session 2 and the Game Capture Fractions to increase student understanding. They can choose from the several K-5 Math Resource problem solving samples, as time or need allows.

10. Learning Practices (What are the students doing)

Students will compare fractions using benchmarks, by rewriting the fractions they are comparing with common numerators or denominators, practicing with the OnCore student pages 103-106. They will work on justifying their comparisons using visual models and recording the results with the $>$, $=$, or $<$ symbols. If their teachers choose, they will continue to develop this concept using the Investigations game Capture Fractions of the problem solving task provided by the K-5 Math Resource site.

Grade 4

Unit 2.4	Unit Title Developing an Understanding of Fractions <small>(limited to fractions with denominators 2,3,4,5,6,8,10,12,100)</small>	Lesson 4 of	Day 9 - 10
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Lesson Focus

1. Standards Addressed	2. Content to be Learned	3. Mathematical Practices	4. Essential Question
<p>4.NF.2 Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or be comparing to a benchmark fraction such as $\frac{1}{2}$. Recognize the results of comparisons with symbols $>$, $=$, or $<$, and justify the conclusion, e.g. by using a visual model.</p>	<ul style="list-style-type: none"> •Order fractions from least to greatest . •Order fractions using a number line or fraction bars. •Explain your reasoning for ordering the fractions the way you did. •When needed, justify your ordering with a visual model. 	<p>SMP2 Reason abstractly and quantitatively.</p> <p>SMP3 Construct viable arguments and critique the reasoning of others.</p> <p>SMP6 Attend to precision.</p> <p>SMP7 Look for and make use of structure.</p>	<ul style="list-style-type: none"> •Explain two strategies that help when ordering fractions. •How does knowing how to compare fractions help you to order them? •How do you know a/b is $<$ c/d? •How can using a number line or fraction bars help you order fractions?
5. Prerequisite Knowledge	6. Essential Vocabulary	7. Possible Misconceptions	8. Necessary Materials
<ul style="list-style-type: none"> •Order whole number. •Understand and use the symbol $<$ correctly. •Compare fractions. •Understand that when comparing unit fractions the larger the denominator, the smaller the fractions. 	<p>Common denominator Common numerator Less than $<$ Number line Benchmarks</p>	<ul style="list-style-type: none"> •Misinterpreting the fraction. •Not understanding how to compare fractions with common numerators. •Forgetting to find a common denominator, just looking at the numbers as a whole number and comparing because one number is larger than the other. For example, $4/12 > 1/3$ because $4 > 1$. 	<p>OnCore Lesson 54 Student pages 107 & 108 Investigations Unit 6 Session 2 Continued from lesson 3 EnVision Topic 10 – 8 Student pages 73 - 76</p> <p>Illustrations interactive: <b style="color: #8B4513;">Fraction Game</p> <hr style="border: 0.5px solid #8B4513;"/> <p>*Use the fraction cards (Fraction Cards) from lesson 3 to have students practice ordering. A clothesline may be used or just have students stand holding the cards.</p>

Instruction

9. Instruction Practices (What are the teachers doing)

Teachers will guide students to using comparing as they order fractions from least to greatest. Fractions can be ordered visually by using area models or symbolically by renaming with a common denominator and then comparing the numerators. In some cases, students can compare fractions simply by using benchmarks or number sense. Teachers will help students understand how to order fractions using the “<” less than symbol, number lines or fractions bars. They will encourage students to explain and share their reasoning. Teachers will utilize OnCore lesson 54, Investigations Unit 6 Session 2, Envision student pages 73 – 76. They may have students practice ordering and placing fractions on a number line using the Illuminations *Fractions Game* or by ordering the fraction cards from lesson 3 on a clothesline/number line.

10. Learning Practices (What are the students doing)

Students will use their prior knowledge of comparing fractions to order fractions from least to greatest. They may order visually by using area models or symbolically by renaming with a common denominator and comparing the numerators. In some cases, they maybe able to compare simply by using a benchmark or number sense. They will order fractions using the “<” less than symbol. Students will be encouraged to explain their reasoning, especially in cases where number sense was used. They will practice this concept using Oncore student pages 107 & 108, Investigations SAB from Unit 6, Session 2 and when needed EnVision student pages. If there is time, the students may play the Fraction Game from the Illuminations Website or order fraction cards on a clothesline/number line.