

GRADE 4 UNIT 4 – EXTEND UNDERSTANDING OF FRACTIONS SOLVE WORD PROBLEMS, AND INTRODUCE DECIMALS.

<p>Established Goals: Standards</p> <p>Number & Operations-Fractions</p> <p>4.NF.5 Add two fractions with respective denominators of 10 and 100 by writing each fraction as a fraction with denominator 100.</p> <p>4.NF.6 Use decimal notation to write fractions with denominators of 10 or 100 by writing each fraction as a fraction with denominator 100.</p> <p>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.</p> <p>Measurement and Data</p> <p>4.MD.3 Apply area and perimeter formulas for rectangles in real world math problems (whole numbers).</p> <p>4.MD.4 Make a line plot to display a data set in measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$) and use it to solve problems involving</p>	Transfer	
	<p><i>Students will be able to:</i></p> <p>Solve real world problems involving fractions or decimals that incorporate measurement</p> <p>Recognize the relationship between multiplication and area in solving real world problems</p> <p>Organize data to solve real world problems</p> <p>Use letters to represent unknowns when solving real world problems</p>	
	Meaning	
	ENDURING UNDERSTANDING	ESSENTIAL QUESTIONS
	<p>The meaning of multiplication applies to the multiplication of fractions as well as whole numbers.</p> <p>The area formula is a multiplication equation with an unknown factor.</p>	<p>When can you use the product of a fraction and a whole number to solve a problem?</p> <p>How are fractions and decimals related?</p> <p>How do you use perimeter and area in solving real world problems?</p> <p>How do you construct line plots and use the data to solve problems?</p>
	Acquisition	
	KNOWLEDGE	SKILLS
	<p><i>Students will know how to...</i></p> <ul style="list-style-type: none"> Decimals can be compared in various 	<p><i>Students will be skilled at...</i></p> <ul style="list-style-type: none"> Compare decimals in the

addition and subtraction of fractions with like denominators.

4.MD.2

Solve word problems involving simple fractions or decimals that incorporate measurement comparisons of like units (including problems that require measurements given in a larger unit in terms of a smaller unit).

Operations and Algebraic Thinking

4.OA.5 Generate number or shape patterns by using rules including words, models, or graphs, and identify apparent features of the pattern that were not explicit in the rule of the original pattern.

4.AO.3 Compose equations from information supplied in word problems using letters to represent unknowns and solve the word problems with addition and subtraction.

ways

- Where fractions lie on a number line
- Concrete, visual, abstract strategies to multiply a fraction by a whole number
- Fractions and decimals are related
- Measurement conversions
- Meaning of area and perimeter
- Area and Perimeter Formulas
- Data can be organized on a line plot
- There are various ways to generate number and shape patterns
- Letters can be used to represent unknowns in equations

hundredths

- Solve problem using data from a line plot
- Construct a line plot
- Multiply fractions by using a model
- Find the area of a rectangle
- Solve problems using the area formula
- Solve problems using area to find perimeter
- Compose equations to solve problems
- Solve conversions problems that incorporate simple fractions and decimals
- Generate number and shape patterns
- Use decimal notation to write fractions
- Use letters to represent unknowns in equations

<p>Math Practice Standards</p> <p>Make sense of problems and persevere in solving them.</p> <p>Reason abstractly and quantitatively.</p> <p>Model with mathematics.</p> <p>Use appropriate tools strategically.</p> <p>Attend to precision.</p> <p>Look for and make use of structure.</p>		
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Vocabulary			Instruction and Pacing (suggested order to teach)	
			Fraction Operations	1 Week
Convert	Unit fraction	Solve	Decimals and Decimal Place Value	2 Weeks
Equation	Whole number			
Product	Addition	Number	Find Number and Shape Patterns to solve problems	1 Week
line Equivalent	Numerator			
Denominator	Multiplication	equation	Fractions and Decimals	1 Week
Place Value	Line Plot	Data		
Construct	Perimeter	Area	Line Plots & Measurement	1 Week
Subtraction	Length	Width		
Formula	Division		Benchmark Testing	2 Weeks
Solve	Interpret	Line Plot		

Decimal Generate	Decimal Notation Compare Pattern	& Reteaching	
Resources			
<p>Common Core Standards, New Jersey Model Curriculum, Go Math Chapter 8 Go Math Chapter 9 Go Math Chapter 12 Go Math Chapter 13 Common Core Standards, New Jersey Model Curriculum People's Common Core Prodigy Math Game - website prodigymath.com SuperTeacherWorksheet.com</p> <p>http://www2.learningtoday.com/corporate/math-curriculum.asp</p>			
Differentiation and Accommodations			
<p>Provide graphic organizers Provide additional examples and opportunities for additional problems for repetition Provide tutoring opportunities Provide retesting opportunities after remediation (up to teacher and district discretion) Teach for mastery not test Teaching concepts in different modalities Adjust pace and homework assignments</p>			
21st Century Skills	Critical Thinking, Creative Thinking, Collaborating, Communicating, and Technology Literacy		
Instructional Strategies	Fairfield Township Schools recognizes		

	<p>the importance of the varying methodologies that may be successfully employed by teachers within the classroom and, as a result, identifies a wide variety of possible instructional strategies that may be used effectively to support student achievement. These may include, but not be limited to, strategies that fall into categories identified by the Framework for Teaching by Charlotte Danielson:</p> <ul style="list-style-type: none"> • Communicating with students • Using questioning and discussion techniques • Engaging students in learning • Using assessment in instruction • Demonstrating Flexibility and Responsiveness
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Interdisciplinary Connections	ELA, Science, and Technology
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Common Misconceptions	Proper Conceptions
When adding and subtracting fractions students add the denominators	Visual models or number lines help to see you are adding the parts (numerator) only to the whole which remains the same (denominator)
The larger the denominator the larger the fraction.	A large denominator indicates smaller parts
Fractions are not numbers	Fractions are numbers representing values less than one or parts of sets
If denominators are even they are equivalent fractions	Equivalent fractions can be found using number lines to compare values
Students confuse the greater and less than sign when comparing fractions	The same rules apply with the greater and less than sign when comparing

	fractions as whole numbers.
Students have difficulty finding fractions close to $\frac{1}{2}$ or $\frac{1}{4}$	Number lines help us to benchmark the value and size of the fractions
Students have difficulty connecting fractions to decimal equivalents	Decimals show fractional parts of a whole
Decimal Place value is different than whole number place value	Decimal place value can be connected to money
Students order decimals incorrectly	Compare the whole number then the tenths first when comparing decimals
Students have difficulty seeing or explaining how to round decimals	Using a number line can help visualize where a decimal rounds to

Performance Task

A scientist measures the lengths of 10 insects. The data is in the table below.

- a) Make a line plot to show the data using a number line for the base of the line plot numbered from 0 to 1.
- b) What is the mode of the data set? How do you know?
- c) How much longer is the longest insect than the shortest insect? Show your work

3/8 inch	1/8 inch	7/8 inch	4/8 inch	3/8 inch
5/8 inch	1 inch	2/8 inch	5/8 inch	5/8 inch

Rubric: One point for each correct bullet.

ASSESSMENTS

Suggested Formative Assessment

Problem of the Day

Lesson Quizzes

Exit Ticket

Anecdotal Records (Topic Observation Checklist)

Suggested Summative Assessment

Grade level developed Unit/Go Math Unit Tests

State Unit Benchmark Assessment/Performance Task