

Grade 4

Unit 2.1	Unit Title Operations and Algebraic Thinking in Problem Solving	Lesson 1 of 3	Day 1-5
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Lesson Focus

1. Standards Addressed	2. Content to be Learned	3. Mathematical Practices	4. Essential Question
<p>4. NBT.6 Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.</p>	<ul style="list-style-type: none"> • Find whole-number quotients with up to four-digit dividends and one-digit divisors. • Use properties based on place value, properties of operations, and the relationship between multiplication and division. • Illustrate and explain calculations by using equations, rectangular arrays, and/or area models. 	<p>SMP2 Reason abstractly and quantitatively</p> <p>SMP3 Construct viable arguments and critique the reasoning of others.</p>	<ul style="list-style-type: none"> • How can you illustrate division of whole numbers using graphic representations? • How can you divide 10s, 100s, and 1000s by whole numbers through 10? • How can you use compatible numbers to estimate quotients? • How can you use the Distributive Property to find quotients? • How can you use partial quotients to divide by 1-digit divisors.
5. Prerequisite Knowledge	6. Essential Vocabulary	7. Possible Misconceptions	8. Necessary Materials
<ul style="list-style-type: none"> • Understand and use multiples. • Identify divisor, dividend, and quotient. • Understand place value. • Use basic division facts. • Use the Distributive Property • Multiply by a number of 10s and 100s. 	<p>Dividend Divisor Quotient Distributive Property Compatible Numbers Partial Quotient</p>		<p>OnCore Lessons 39-41, 43 Student pgs. 77-82, 85-86 Base-ten blocks Graph/Grid paper (optional)</p>

Instruction

<p>9. Instruction Practices (What are the teachers doing)</p> <p>Teachers will guide children to divide tens, hundreds, and thousands by whole numbers through 10, use compatible numbers to estimate quotients, use the Distributive Property, repeated subtraction, and multiples to find quotients, and use partial quotients to divide following the lesson guidelines in OnCore lessons 39-41, 43 (TM pp. 41-43, 45), teachers will:</p> <p>Have students look for basic facts and use place value of the dividend to divide. Explain that thinking of multiples of the divisor helps them find numbers that are close to the first two digits of the dividends. Define the Distributive Property for division & extend the activity by showing students how to use an area model to divide. Remind students that every time they multiply by the divisor, the number they multiply is a partial quotient. Remind students they can use rectangular models to record partial quotients.</p>	<p>10. Learning Practices (What are the students doing)</p> <p>In Lessons 39-43 students will:</p> <ul style="list-style-type: none"> • Divide base-ten blocks into equal groups. • Use compatible numbers to estimate quotients. • Use area models to divide and model the Distributive Property. • Draw rectangular models and shade numbers that are subtracted. • Notice the similarity to the rectangular model for using the Distributive Property for division. Also notice that the numbers at the top of the rectangles are the partial quotients.
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Grade 4

Unit 2.1	Unit Title Operations and Algebraic Thinking in Problem Solving	Lesson 2 of 3	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. OA.2 Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguish multiplicative comparison from additive comparison.</p>	<ul style="list-style-type: none"> •Multiply or divide to solve word problems involving multiplicative comparison. •Use drawings and equations with a symbol for the unknown number to represent the problem. 	<p>SMP1 Make sense of problems and persevere in solving them.</p> <p>SMP2 Reason abstractly and quantitatively</p> <p>SMP3 Construct viable arguments and critique the reasoning of others.</p>	<ul style="list-style-type: none"> •Given a multiplication or division word problem, how can multiplicative comparison be used to solve it? •How does a model help you solve a comparison problem? •What is multiplicative comparison? Give an example and show or explain how it differs from additive comparison.
5. Prerequisite Knowledge	6. Essential Vocabulary	7. Possible Misconceptions	8. Necessary Materials
<ul style="list-style-type: none"> •Interpret multiplication as a comparison. •Write a multiplication comparison statement as an equation. •Multiply with whole numbers through 10. 	Dividend Divisor Quotient		<p>K-5 Math Resources – 27 word problems involving multiplicative comparisons.</p>

Instruction

<p>9. Instruction Practices (What are the teachers doing)</p> <ul style="list-style-type: none"> •Teachers will continue to remind students that multiplication and division can be used to compare numbers. •They will give students examples of word problems using multiplicative comparisons to review the concept. •Teachers will make sure that students understand that when writing an equation, a letter like n is used to represent an unknown. 	<p>10. Learning Practices (What are the students doing)</p> <p>Students will use multiplicative comparisons to draw a model, write an equation and solve multiplication and division word problems.</p>
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Grade 4

Unit 2.1	Unit Title Operations and Algebraic Thinking in Problem Solving	Lesson 3 of 3	Day 9-11
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Lesson Focus

1. Standards Addressed	2. Content to be Learned	3. Mathematical Practices	4. Essential Question
<p>4. OA.3. Solve multi-step word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.</p>	<ul style="list-style-type: none"> • Solve multi-step word problems with whole numbers using the four operations. • Assess the reasonableness of answers using mental math, estimation, and rounding. 	<p>SMP1 Make sense of problems and persevere in solving them.</p> <p>SMP2 Reason abstractly and quantitatively</p> <p>SMP3 Construct viable arguments and critique the reasoning of others.</p>	<ul style="list-style-type: none"> • How do you represent an solve a multistep word problem with whole numbers using equations with an unknown? • How can you use the strategy <i>draw a diagram</i> to solve multistep multiplication problems? • What methods can you use to assess the reasonableness of your answers?
5. Prerequisite Knowledge	6. Essential Vocabulary	7. Possible Misconceptions	8. Necessary Materials
<ul style="list-style-type: none"> • Add, subtract, and multiply with 1-digit and 2-digit numbers. • Multiply two-digit numbers. • Draw a bar model to represent subtraction. 	Dividend Divisor Quotient Digit Order of Operations Expressions Equations		<p>OnCore Lessons 4 and 5 Student pgs. 7-10</p>

Instruction

<p>9. Instruction Practices (What are the teachers doing)</p> <p>Teachers will guide children to represent & solve multistep problems using equations and use the strategy <i>draw a diagram</i> to solve multistep multiplication problems following the lesson guidelines in OnCore lessons 4 and 5 (TM pp. 5-6), teachers will: Guide students to solve multistep equations using order of operations before having them solve multistep word problems. Encourage students to draw rings around the multiplication expressions to highlight the fact that these must be performed first. Guide students to understand why we use multiplication to represent equal groups and have them explain how a bar model helps them solve the problem.</p>	<p>10. Learning Practices (What are the students doing)</p> <p>In Lessons 4 and 5 students will:</p> <ul style="list-style-type: none"> • Use Order of Operations to solve multistep problems. • Draw rings around the multiplication expressions and perform these first. • Use bar models to represent a comparison problem and subtract. • Multiply 2-digit numbers.
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