

Grade 4			
Unit	Unit Title	Lesson	Day
1.2	Multiply with Whole Numbers to Solve Problems	1 of 7	1
Lesson Focus			
1. Standards Addressed	2. Content to be Learned	3. Mathematical Practices	4. Essential Question
4.OA.1 Interpret a multiplication equation as a comparison, e.g., interpret $35 = 5 \times 7$ as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.	Interpret a multiplication comparison as a comparison	SMP1 Make sense of problems and persevere in solving them SMP2 Reason abstractly and quantitatively. SMP4 Model with mathematics	How can you model multiplication comparisons?
5. Prerequisite Knowledge	6. Essential Vocabulary	7. Possible Misconceptions	8. Necessary Materials
Multiply with two 1-digit Factors	Equation Unknown		<ul style="list-style-type: none"> • OnCore Lesson 1 Student pp.1and 2 • Investigations Unit 1 Sessions 2.1 TM pp. 58-63 Resource Master 33 (Quick Image Cards)
Instruction			
9. Instruction Practices (What are the teachers doing)		10. Learning Practices (What are the students doing)	
Teacher will: <ul style="list-style-type: none"> • Guide students through the example on top of OnCore Lesson 1 page 1. • Review with students the word “equation”. • Explain what an “unknown” is. • Discuss with students how to translate a comparison statement into an equation. 		Students will: <ul style="list-style-type: none"> • Draw a model for problems and write equations to represent multiplicative comparisons. • Write comparison equations and solve problems. • Look at quick images and represent their multiplicative thinking. 	

**Lesson Alignment Guide – Mathematics
Cranston Public Schools**

Grade 4			
Unit 1.2	Unit Title Multiply with Whole Numbers to Solve Problems	Lesson 2 of 7	Day 2 and 3
Lesson Focus			
1. Standards Addressed	2. Content to be Learned	3. Mathematical Practices	4. Essential Question
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, distinguishing multiplicative comparison from additive comparison. ¹	Solve word problems involving multiplicative comparisons	SMP1 Make sense of problems and persevere in solving them SMP2 Reason abstractly and quantitatively. SMP4 Model with mathematics	How does a model help you solve a comparison problem?
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 	Equation Bar Model Unknown		OnCore Lesson 2 Student pages 3 & 4 Investigations Snap-In Unit 1 - 1.6A Student pp. C2- C4
Instruction			
9. Instruction Practices (What are the teachers doing)		10. Learning Practices (What are the students doing)	
<ul style="list-style-type: none"> Give students examples of multiplication comparisons to review the concept Comparisons may be represented using a bar model or diagram. Make sure students understand when writing an equation the letter n is the unknown Review OnCore Lesson 2 page 3 comparison problem. 		Students will draw a model, write an equation, and solve comparison problems using n for the unknown by completing Lesson 2 pages 3 & 4 and Investigations Unit 1.6A pages C2, C3, C4	

**Lesson Alignment Guide – Mathematics
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Grade 4

Unit 1.2	Unit Title Multiply with Whole Numbers to Solve Problems	Lesson 3 of 7	Day 4
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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 multistep 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>	<p>Solve multi-step word problems with whole numbers representing the problem with an equation with a letter standing for the unknown.</p>	<p>SMP1 Make sense of problems and persevere in solving them SMP2 Reason abstractly and quantitatively. SMP4 Model with mathematics.</p>	<p>When can you use the draw a diagram strategy to solve a multistep multiplication problem?</p>
5. Prerequisite Knowledge	6. Essential Vocabulary	7. Possible Misconceptions	8. Necessary Materials
<p>Use equal groups and arrays to model multiplication</p>	<p>Unknown</p>		<p>OnCore Lesson 3 pages 5-6 Investigations Unit 3 Session 1.1 SAB p.2</p>

Instruction

<p>9. Instruction Practices (What are the teachers doing) Teachers will:</p> <ul style="list-style-type: none"> • Review with students how to model a multiplication by drawing equal groups and by drawing an array. • Model to students how drawing a diagram can help them solve problems that involve several steps. • Remind students that they need to perform more than one operation to solve each problem. 	<p>10. Learning Practices (What are the students doing) Students will solve multistep multiplication problems using the strategy <i>draw a diagram</i> on OnCore pages 5 & 6 Students will also solve multistep multiplication problems from Investigations SAB Unit 3 page 2,</p>
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Grade 4

Unit 1.2	Unit Title Multiply with Whole Numbers to Solve Problems	Lesson 4 of 7	Day 5 - 7
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Lesson Focus

1. Standards Addressed	2. Content to be Learned	3. Mathematical Practices	4. Essential Question
<p>4.NBT.5 Multiply a whole number of up to four digits by a one-digit whole number, ... using strategies based on place value Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models</p>	<p>Multiply a whole number up to four digits by a one-digit number using strategies based on place value.</p>	<p>SMP1 Make sense of problems and persevere in solving them SMP2 Reason abstractly and quantitatively. SMP4 Model with mathematics.</p>	<p>•How does understanding place value help you multiply tens, hundreds, and thousands? •Why are the number of zeros in the product $5 \times 4,000$ different than the number of zeros in the product of $6 \times 4,000$?</p>
5. Prerequisite Knowledge	6. Essential Vocabulary	7. Possible Misconceptions	8. Necessary Materials
<ul style="list-style-type: none"> • Understand Place Value • Multiply with two 1-digit factors • Use arrays to model product and factors 	<p>Place value, Estimate, Factor, Product, Rounding</p>	<p>Students may not have the correct number of zeros in their final product, because they forget to include the zero from the basic fact. For example 5×4000; the basic fact $5 \times 4 = 20$ then the answer will have 4 zeros, not 3. See example in OnCore Student p.45.</p>	<p>OnCore Lesson 23 & 24 Investigations Unit 3 Session 3.1-3.4 Investigations Unit 4 SAB p.53 Investigation Unit 5 SAB p.27 Investigation Unit 9 Snap-In p.C65</p>

Instruction

9. Instruction Practices (What are the teachers doing)	10. Learning Practices (What are the students doing)
<ul style="list-style-type: none"> • Model to students how multiplying a 1-digit number by a multiple of 10, 100, or 1000 can be accomplished by place value concepts. • Illustrate and explain calculations by using equations, rectangular arrays, and/or area models. • Explain how the number of zeros in the factors corresponds to the number of zeros in the product. • Emphasize how even though the product of a basic fact has a zero, another zero will be in the final product: for example 5×4000; $5 \times 4 = 20$ then the final product will have 4 zeros. 	<p>Students will use place value and patterns to multiply with tens, hundreds, and thousands. Students will complete the following pages: OnCore pages 45 - 48 and Investigations SAB:</p> <ul style="list-style-type: none"> • Unit 3 page 42, 43, 47, 48, 50 • Unit 4 page 53 • Unit 5 page 27

Grade 4

Unit 1.2	Unit Title Multiply with Whole Numbers to Solve Problems	Lesson 5 of 7	Day 8 -10
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Lesson Focus

1. Standards Addressed	2. Content to be Learned	3. Mathematical Practices	4. Essential Question
<p>4.NBT.5 Multiply a whole number of up to four digits by a one-digit whole number, ...using strategies based on the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.</p>	<p>Using the Distributive Property to multiply a 2-digit number by a 1-digit number</p> <p>Using expanded form to multiply a multi-digit number by a 1-digit number</p>	<p>SMP1 Make sense of problems and persevere in solving them</p> <p>SMP2 Reason abstractly and quantitatively.</p> <p>SMP4 Model with mathematics.</p>	<ul style="list-style-type: none"> •How can you use the Distributive Property to multiply a 2-digit number by a 1-digit number? •How can you use expanded form to multiply a multi-digit number by a 1-digit number?
5. Prerequisite Knowledge	6. Essential Vocabulary	7. Possible Misconceptions	8. Necessary Materials
<ul style="list-style-type: none"> • Use array to model products and factors • Find products involving two 1-digit factors by breaking apart arrays 	<p>distributive property</p> <p>partial product</p> <p>product</p> <p>expanded form</p>	<ul style="list-style-type: none"> •Errors in use of the Distributive Property, adding when you should multiply, etc. •Incorrectly decomposing of a number. 	<p>OnCore Lesson 25 & 26</p> <p>Investigations Unit 3 Sessions 1.1-1.5</p> <p>SAB pp.7, 8 and 11,12</p> <p>Resource Master M43 (optional assessment)</p>

Instruction

<p>9. Instruction Practices (What are the teachers doing)</p> <p>Teachers will:</p> <ul style="list-style-type: none"> • Model to students how when multiplying a 2-digit number by a 1-digit number, the 2-digit number can be decomposed into tens and ones. • Show how the product of a multi-digit number by a 1-digit number can be found by applying the expanded form and the Distributive Property. 	<p>10. Learning Practices (What are the students doing)</p> <p>Students will use expanded form and the distributive property to multiply multi-digit numbers by a 1-digit number.</p> <p>Students will complete the following pages:</p> <p>OnCore pages 49, 50, 51, 52</p> <p>Investigations SAB Unit 3 pp. 7, 8, 11, and 12</p>
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Grade 4

Unit 1.2	Unit Title Multiply with Whole Numbers to Solve Problems	Lesson 6 of 7	Day 11 and 12
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Lesson Focus

1. Standards Addressed	2. Content to be Learned	3. Mathematical Practices	4. Essential Question
<p>4.NBT.5 Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.</p>	<p>Use place value and partial products to multiply a multi-digit number by a 1-digit number</p>	<p>SMP1 Make sense of problems and persevere in solving them SMP2 Reason abstractly and quantitatively. SMP4 Model with mathematics.</p>	<p>How can you use place value and partial products to multiply a multi-digit number by a 1-digit number?</p>
5. Prerequisite Knowledge	6. Essential Vocabulary	7. Possible Misconceptions	8. Necessary Materials
<ul style="list-style-type: none"> • Identify the place value of a digit in a multi-digit number • Estimate products by rounding 	<p>Partial product</p>	<p>Make sure students understand how to work with the partial product of 0.</p>	<p>OnCore Lesson 27</p> <p>Design own problems for continued practice with partial products.</p>

Instruction

<p>9. Instruction Practices (What are the teachers doing) Teachers will:</p> <ul style="list-style-type: none"> • Model how products can be calculated by the sum of partial products. • Please note the examples multiply from left to right (hundreds first), but remind students that it is commutative and you can multiply from right to left. 	<p>10. Learning Practices (What are the students doing) Students are using place value and partial products to multiply a multi-digit number by a 1-digit number. Students will complete OnCore pages 53 & 54</p>
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Grade			
Unit 1.2	Unit Title Multiply with Whole Numbers to Solve Problems	Lesson 7 of 7	Day 13 - 15
Lesson Focus			
1. Standards Addressed	2. Content to be Learned	3. Mathematical Practices	4. Essential Question
<p>4.NBT.5 Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.</p>	<p>Use regrouping to multiply a 2-digit, 3-digit, and 4-digit number by a 1-digit number</p>	<p>SMP1 Make sense of problems and persevere in solving them SMP2 Reason abstractly and quantitatively. SMP4 Model with mathematics</p>	<p>How can you use regrouping to multiply a multi-digit number by a 1-digit number?</p> <p>How is regrouping like partial products?</p>
5. Prerequisite Knowledge	6. Essential Vocabulary	7. Possible Misconceptions	8. Necessary Materials
<ul style="list-style-type: none"> Identify the place value of a digit in a multi-digit number Use place value and partial products to multiply a multidigit number by a 1-digit number 	<p>Regrouping Standard algorithm</p>	<p>Misunderstanding of place value. Errors in regrouping.</p>	<p>OnCore Lesson 29 & 30 Investigations SAB Unit 3 pp.3, 13, and 61 (use regrouping)</p>
Instruction			
9. Instruction Practices (What are the teachers doing)		10. Learning Practices (What are the students doing)	
<p>Teachers will:</p> <ul style="list-style-type: none"> Model to students how multiplication using expanded form or partial product breaks down calculations to make them simpler. Show to students how the standard multiplication algorithm involves the same calculations, but in abbreviated form. Review with students how to multiply a 2-digit number by a 1-digit number with regrouping. 		<p>Students are using regrouping to multiply a multi-digit number by a 1-digit number.</p> <p>Students will complete: OnCore pages 57 - 60</p> <p>Investigations SAB Unit 3 pages 3, 13 and 61 can be used with regrouping.</p>	

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