Camelot Learning
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Lesson Learning Quest	Concept/Skill	Common Core Standards	NCTM Standards
Lesson 1: Commutative Property **Lesson 2:** Commutative Property Review How can you use your knowledge of *Commutative Property* to recall basic addition facts?	• Subtraction facts practice • Addition facts • Fluency in addition and subtraction • Understand addition and subtraction expressions and equations • Recognize, describe, extend, create, and replicate a variety of patterns • Properties of addition (Commutative Property) • Compute sums and differences of whole numbers • Mental computation • Communication of ideas using mathematical	**Operations and Algebraic Thinking** *Understand and apply properties of operations and the relationship between addition and subtraction.* (Grade 1) • Apply properties of operations as strategies to add and subtract. *Add and subtract within 20.* (Grade 2) • Fluently add and subtract within 20 using mental strategies. **Number and Operations in Base Ten** *Use place value understanding and properties of operations to add and subtract.* (Grade 2) • Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.	**Number and Operations** *Understand meanings of operations and how they relate to one another* (Pre-K – Grade 2) • Understand the effects of adding and subtracting whole numbers *Compute fluently and make reasonable estimates* (Grades 3-5) • Develop fluency in subtracting whole numbers (Pre-K – Grade 2) • Develop and use strategies for whole-number computations, with a focus on addition and subtraction • Develop fluency with basic number combinations for addition and subtraction • Use a variety of methods and tools to compute, including objects, mental computation, estimation, paper and pencil, and calculators. **Algebra** *Understand patterns, relations and functions* (Pre-K – Grade 2) • Recognize, describe, and extend

	vocabulary	• Explain why addition and subtraction strategies work, using place value and the properties of operations.	patterns such as simple numeric patterns and translate from one representation to another *Represent and analyze mathematical situations and structures using algebraic symbols* (Pre-K – Grade 2) • Illustrate general principles and properties of operations, such as commutativity, using specific numbers • Use concrete, pictorial, and verbal representations to develop an understanding of invented and conventional symbolic notations. **Problem Solving** (Pre-K- Grade 5) • Monitor and reflect on the process of mathematical problem solving • Apply and adapt a variety of appropriate strategies to solve problems **Communication** (Pre-K-Grade 5) • Communicate mathematical thinking coherently and clearly • Use the language of mathematics to express mathematical ideas precisely
Lesson 3: The Ten Frame	• Subtraction facts practice • Fluency in addition	**Operations and Algebraic Thinking** *Generate and analyze patterns.*	**Number and Operations** *Understand meanings of operations and how they relate to one another*

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Lesson 4: The Ten Frame Review How can you use the strategy *'Make a Ten'* to add and subtract facts to 18?	and subtraction • Understand addition and subtraction expressions and equations • Apply addition and subtraction in everyday situations • Develop fluency in subtracting whole numbers • Understand the effects of adding and subtracting whole numbers • Mental computations • Compute sums and differences of whole numbers • Describe patterns of data shown in tables • Communicate ideas using mathematical vocabulary	(Grade 4) • Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. *For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.* *Add and subtract within 20.* (Grade 2) • Fluently add and subtract within 20 using mental strategies. (Grade 1) • Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14)	(Pre-K – Grade 2) • Understand the effects of adding and subtracting whole numbers *Compute fluently and make reasonable estimates* (Grades 3- 5) • Develop fluency in subtracting whole numbers (Pre-K – Grade 2) • Develop and use strategies for whole-number computations, with a focus on addition and subtraction • Develop fluency with basic number combinations for addition and subtraction • Use a variety of methods and tools to compute, including objects, mental computation, estimation, paper and pencil, and calculators. *Understand numbers, ways of representing numbers, relationships among numbers, and number systems* (Pre-K – Grade 2) • Develop a sense of whole numbers and represent and use them in flexible ways, including relating, composing, and decomposing numbers **Algebra** *Understand patterns, relations and*

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			functions (Pre-K – Grade 2) • Recognize, describe, and extend patterns such as simple numeric patterns and translate from one representation to another *Represent and analyze mathematical situations and structures using algebraic symbols* (Pre-K – Grade 2) • Use concrete, pictorial, and verbal representations to develop an understanding of invented and conventional symbolic notations. **Problem Solving** (Pre-K – Grade 5) • Monitor and reflect on the process of mathematical problem solving • Apply and adapt a variety of appropriate strategies to solve problems **Communication** (Pre-K – Grade 5) • Communicate mathematical thinking coherently and clearly • Use the language of mathematics to express mathematical ideas precisely
Lesson 5: Mental Math Strategies	• Subtraction facts practice • Use mental math strategies to	**Operations and Algebraic Thinking** *Solve problems involving the four operations, and identify and explain*	**Number and Operations** *Understand meanings of operations and how they relate to one another* (Pre-K – Grade 2)

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Lesson 6: Mental Math Strategies Review How can you use *Mental Math Strategies* to find sums and differences without doing the written problems in your head?	compute numbers up to three-digits • Understand addition and subtraction expressions and equations • Use estimation skills to arrive at conclusions • Form rules based on patterns • Find the sums and differences of one and two-digit numbers with regrouping • Communicate ideas using mathematical vocabulary	*patterns in arithmetic.* (Grade 3) • Assess the reasonableness of answers using mental computation and estimation strategies including rounding. *Add and subtract within 20.* (Grade 2) • Fluently add and subtract within 20 using mental strategies. (Grade 1) • Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13). **Number and Operations in Base**	• Understand the effects of adding and subtracting whole numbers *Computes fluently and make reasonable estimates* (Grades 3-5) • Develop fluency in subtracting whole numbers • Develop and use strategies to estimate the results of whole-number computations and to judge the reasonableness of such results (Pre-K – Grade 2) • Develop and use strategies for whole-number computations, with a focus on addition and subtraction • Develop fluency with basic number combinations for addition and subtraction • Use a variety of methods and tools to compute, including mental computation and estimation. **Algebra** *Understand patterns, relations and functions* (Pre-K – Grade 2) • Recognize, describe, and extend patterns such as simple numeric patterns and translate from one representation to another *Represent and analyze mathematical*

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		Ten *Use place value understanding and properties of operations to add and subtract.* (Grade 2) • Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction. • Explain why addition and subtraction strategies work, using place value and the properties of operations.	*situations and structures using algebraic symbols* (Pre-K – Grade 2) • Use concrete, pictorial, and verbal representations to develop an understanding of invented and conventional symbolic notations. **Problem Solving** (Pre-K-Grade 5) • Monitor and reflect on the process of mathematical problem solving • Apply and adapt a variety of appropriate strategies to solve problems **Communication** (Pre-K-Grade 5) • Communicate mathematical thinking coherently and clearly • Use the language of mathematics to express mathematical ideas precisely
Lesson 7: Caterpillar Ride **Lesson 8:** Caterpillar Ride Review How can your knowledge of rounding and estimating help you	• Subtraction facts practice • Fluency in addition and subtraction • Find the sums and differences of one and two-digit numbers with regrouping • Use mental math strategies to	**Operations and Algebraic Thinking** *Solve problems involving the four operations, and identify and explain patterns in arithmetic.* (Grade 3) • Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown	**Number and Operations** *Understand meanings of operations and how they relate to one another* (Pre-K – Grade 2) • Understand the effects of adding and subtracting whole numbers *Compute fluently and make reasonable estimates* (Grades 3-5) • Develop fluency in subtracting whole numbers

solve multi-digit addition and subtraction problems?	compute numbers up to three digits • Estimate sums and differences of whole numbers and money amounts • Use estimation skills to arrive at conclusions • Assess the reasonableness of answers • Round whole numbers and decimals • Understand addition and subtraction expressions and equations • Communicate ideas using mathematical vocabulary	quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. *Add and subtract within 20.* (Grade 2) • Fluently add and subtract within 20 using mental strategies. **Number and Operations in Base Ten** *Use place value understanding and properties of operations to perform multi-digit arithmetic.* (Grade 3) • Use place value understanding to round whole numbers to the nearest 10 or 100. • Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.	• Develop and use strategies to estimate the results of whole-number computations and to judge the reasonableness of such results • Develop and use strategies to estimate computations involving fractions and decimals in situations relevant to students' experience (Pre-K – Grade 2) • Develop and use strategies for whole-number computations, with a focus on addition and subtraction • Develop fluency with basic number combinations for addition and subtraction • Use a variety of methods and tools to compute, including mental computation and estimation. **Algebra** *Represent and analyze mathematical situations and structures using algebraic symbols* (Pre-K-Grade 2) • Use concrete, pictorial, and verbal representations to develop an understanding of invented and conventional symbolic notations. **Problem Solving** (Pre-K-Grade 5) • Monitor and reflect on the process of mathematical problem solving

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			• Apply and adapt a variety of appropriate strategies to solve problems **Communication** (Pre-K-Grade 5) • Communicate mathematical thinking coherently and clearly • Use the language of mathematics to express mathematical ideas precisely
Lesson 9: Mental Math Strategies **Lesson 10:** Mental Math Strategies Review How can you use *Mental Math Strategies* to solve multi-digit whole number addition problems in your head?	• Subtraction facts practice • Fluency in addition and subtraction • Use mental math strategies to compute numbers up to three digits • Compute sums of three-digit numbers • Understand addition and subtraction expressions and equations • Communicate ideas using mathematical vocabulary	**Operations and Algebraic Thinking** *Add and subtract within 20.* (Grade 2) • Fluently add and subtract within 20 using mental strategies. **Number and Operations in Base Ten** *Use place value understanding and properties of operations to perform multi-digit arithmetic.* (Grade 3) • Use place value understanding to round whole numbers to the nearest 10 or 100. • Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of	**Number and Operations** *Understand meanings of operations and how they relate to one another* (Pre-K – Grade 2) • Understand the effects of adding and subtracting whole numbers *Computes fluently and make reasonable estimates* (Grades 3 – 5) • Develop fluency in adding whole numbers (Pre-K – Grade 2) • Develop and use strategies for whole-number computations, with a focus on addition and subtraction • Develop fluency with basic number combinations for addition and subtraction • Use a variety of methods and tools to compute, including mental computation and estimation

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		operations, and/or the relationship between addition and subtraction.	**Algebra** *Represent and analyze mathematical situations and structures using algebraic symbols* (Pre-K-Grade 2) • Use concrete, pictorial, and verbal representations to develop an understanding of invented and conventional symbolic notations. **Problem Solving** (Pre-K-Grade 5) • Monitor and reflect on the process of mathematical problem solving • Apply and adapt a variety of appropriate strategies to solve problems **Communication** (Pre-K-Grade 5) • Communicate mathematical thinking coherently and clearly • Use the language of mathematics to express mathematical ideas precisely
Lesson 11: Mental Math with Multi-Digits **Lesson 12:** Mental Math with Multi-Digits Review How does	• Subtraction facts practice • Fluency in addition and subtraction • Find sums and differences of two and three-digit numbers with regrouping	**Operations and Algebraic Thinking** *Solve problems involving the four operations, and identify and explain patterns in arithmetic.* (Grade 3) • Assess the reasonableness of answers using mental computation and estimation	**Number and Operations** *Understand meanings of operations and how they relate to one another* (Pre-K – Grade 2) • Understand the effects of adding and subtracting whole numbers *Computes fluently and make reasonable estimates* (Grades 3 – 5)

understanding *Place Value* help you when you are adding and subtracting numbers that have more than one digit?	• Use estimation skills to arrive at conclusions • Use place value models to represent the value of digits in a number • Use mental math strategies to compute numbers up to three digits • Compute sums of three-digit numbers • Understand addition and subtraction expressions and equations • Communicate ideas using mathematical vocabulary	strategies including rounding. *Add and subtract within 20.* (Grade 2) • Fluently add and subtract within 20 using mental strategies. **Number and Operations in Base Ten** *Use place value understanding and properties of operations to perform multi-digit arithmetic.* (Grade 3) • Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.	• Develop fluency in adding and subtracting whole numbers • Develop and use strategies to estimate the results of whole-number computations and to judge the reasonableness of such results (Pre-K – Grade 2) • Develop and use strategies for whole-number computations, with a focus on addition and subtraction • Develop fluency with basic number combinations for addition and subtraction • Use a variety of methods and tools to compute, including mental computation and estimation. *Understand numbers, ways of representing numbers, relationships among numbers, and number systems* (Grades 3 – 5) • Understand the place-value structure of the base-ten number system and be able to represent and compare whole numbers • Recognize equivalent representations for the same number and generate them by decomposing and composing numbers (Pre-K – Grade 2)

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			• Connect number words and numerals to the quantities they represent, using various physical models and representations **Algebra** *Represent and analyze mathematical situations and structures using algebraic symbols* (Pre-K-Grade 2) • Use concrete, pictorial, and verbal representations to develop an understanding of invented and conventional symbolic notations. **Problem Solving** (Pre-K-Grade 5) • Monitor and reflect on the process of mathematical problem solving • Apply and adapt a variety of appropriate strategies to solve problems **Communication** (Pre-K-Grade 5) • Communicate mathematical thinking coherently and clearly • Use the language of mathematics to express mathematical ideas precisely
Lesson 13: Knowledge of Place Value **Lesson 14:**	• Subtraction facts practice • Identify the place and value of digits in five-digit	**Operations and Algebraic Thinking** *Add and subtract within 20.* (Grade 2) • Fluently add and subtract	**Number and Operations** *Computes fluently and make reasonable estimates* (Grades 3 – 5) • Develop fluency in subtracting whole

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Knowledge of Place Value Review How can you use your knowledge of place value to help you compare and order large numbers?	numbers • Order and compare numbers through the ten-thousands • Use place value models to represent the value of digits in a number • Communicate ideas using mathematical vocabulary	within 20 using mental strategies. **Number and Operations in Base Ten** *Generalize place value understanding for multi-digit whole numbers.* (Grade 4) • Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.	numbers *Understand numbers, ways of representing numbers, relationships among numbers, and number systems* (Grades 3 – 5) • Understand the place-value structure of the base-ten number system and be able to represent and compare whole numbers • Recognize equivalent representations for the same number and generate them by decomposing and composing numbers (Pre-K – Grade 2) • Connect number words and numerals to the quantities they represent, using various physical models and representations **Problem Solving** (Pre-K-Grade 5) • Solve problems that arise in mathematics and in other contexts • Monitor and reflect on the process of mathematical problem solving **Communication** (Pre-K-Grade 5) • Communicate mathematical thinking coherently and clearly • Use the language of mathematics to express mathematical ideas precisely

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Lesson 15: Extending Knowledge of Place Value **Lesson 16:** Extending Knowledge of Place Value Review How can you use your knowledge of place value and basic facts to solve multi-digit subtraction problems?	• Subtraction facts practice • Fluency in addition and subtraction • Find differences of two and three-digit numbers with renaming • Subtract like units and decompose when necessary • Use estimation skills to arrive at conclusions • Use mental math strategies to compute numbers up to three digits • Understand addition and subtraction expressions and equations • Communicate ideas using mathematical vocabulary	**Operations and Algebraic Thinking** *Solve problems involving the four operations, and identify and explain patterns in arithmetic.* (Grade 3) • Assess the reasonableness of answers using mental computation and estimation strategies including rounding. *Add and subtract within 20.* (Grade 2) • Fluently add and subtract within 20 using mental strategies. *Work with addition and subtraction equations.* (Grade 1) • Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations 8 + ? = 11, 5 = _ – 3, 6 + 6 = _.* **Number and Operations in Base Ten** *Use place value understanding and properties of operations to perform*	**Number and Operations** *Understand meanings of operations and how they relate to one another* (Grades 3 – 5) • Understand the effects of adding and subtracting whole numbers *Compute fluently and make reasonable estimates* (Grades 3 – 5) • Develop fluency in subtracting whole numbers • Develop and use strategies to estimate the results of whole-number computations and to judge the reasonableness of such results (Pre-K – Grade 2) • Develop and use strategies for whole-number computations, with a focus on addition and subtraction • Develop fluency with basic number combinations for addition and subtraction • Use a variety of methods and tools to compute, including mental computation and estimation. *Understand numbers, ways of representing numbers, relationships among numbers, and number systems* (Grades 3 – 5) • Understand the place-value

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		multi-digit arithmetic. (Grade 3) • Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction. (Grade 2) *Use place value understanding and properties of operations to add and subtract.* • Explain why addition and subtraction strategies work, using place value and the properties of operations.	structure of the base-ten number system and be able to represent and compare whole numbers • Recognize equivalent representations for the same number and generate them by decomposing and composing numbers (Pre-K – Grade 2) • Connect number words and numerals to the quantities they represent, using various physical models and representations **Algebra** *Represent and analyze mathematical situations and structures using algebraic symbols* (Pre-K-Grade 2) • Use concrete, pictorial, and verbal representations to develop an understanding of invented and conventional symbolic notations. **Problem Solving** (Pre-K-Grade 5) • Monitor and reflect on the process of mathematical problem solving • Apply and adapt a variety of appropriate strategies to solve problems **Communication** (Pre-K-Grade 5) • Communicate mathematical thinking

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			coherently and clearly • Use the language of mathematics to express mathematical ideas precisely
Lesson 17: Finding Patterns to Solve Problems **Lesson 18:** Finding Patterns to Solve Problems Review How can we use *Patterns* as a problem-solving strategy to generate rules and make predictions?	• Subtraction facts practice • Use problem solving strategies • Recognize patterns • Write and apply a rule or generalization • Find the missing number • Communicate ideas using mathematical vocabulary	**Operations and Algebraic Thinking** *Generate and analyze patterns.* (Grade 4) • Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. *For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.* *Solve problems involving the four operations, and identify and explain patterns in arithmetic.* (Grade 3) • Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using	**Number and Operations** *Computes fluently and make reasonable estimates* (Grades 3 – 5) • Develop fluency in subtracting whole numbers • Select and use appropriate methods and tools for computing with whole numbers **Algebra** *Understand patterns, relations and functions* (Grades 3 – 5) • Describe, extend, and make generalizations about geometric and numeric patterns • Represent and analyze patterns and functions, using words, tables, and graphs *Represent and analyze mathematical situations and structures using algebraic symbols* (Grade 3– Grade 5) • Express mathematical relationships using equations (Grade K– Grade 2)

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		properties of operations. *For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.* *Add and subtract within 20.* (Grade 2) • Fluently add and subtract within 20 using mental strategies. *Work with addition and subtraction equations.* (Grade 1) • Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations 8 + ? = 11, 5 = _ – 3, 6 + 6 = _.*	• Use concrete, pictorial, and verbal representations to develop an understanding of invented and conventional symbolic notations. *Use mathematical models to represent and understand quantitative relationships* (Grades 3- 5) • Model problem situations with objects and use representations such as graphs, tables, and equations to draw conclusions. **Problem Solving** (Pre-K-Grade 5) • Monitor and reflect on the process of mathematical problem solving • Apply and adapt a variety of appropriate strategies to solve problems **Communication** (Pre-K-Grade 5) • Communicate mathematical thinking coherently and clearly • Use the language of mathematics to express mathematical ideas precisely
Lesson 19: Solve Addition & Subtraction Problems **Lesson 20:** Solve Addition &	• Subtraction and addition facts practice • Fluency in addition and subtraction • Solve addition and	**Operations and Algebraic Thinking** *Solve problems involving the four operations, and identify and explain patterns in arithmetic.* (Grade 3) • Solve two-step word problems	**Number and Operations** *Computes fluently and make reasonable estimates* (Grades 3 – 5) • Develop fluency in adding and subtracting whole numbers

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Subtraction Problems Review How can we solve addition and subtraction problems using data from bar graphs?	subtraction problems using information represented in a bar graph • Solve word problems using addition and subtraction • Use problem solving strategies • Select a method for computation and explain why it is appropriate • Estimate sums and differences of whole numbers • Calculate sums and differences of whole numbers • Predict the outcome of an event based on analyzed data • Read and interpret bar graphs • Answer and formulate questions for bar	using the four operations. 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. *Add and subtract within 20.* (Grade 2) • Fluently add and subtract within 20 using mental strategies. **Number and Operations in Base Ten** *Use place value understanding and properties of operations to perform multi-digit arithmetic.* (Grade 3) • Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction. **Measurement and Data** *Represent and interpret data.* (Grade 3) • Draw a scaled picture graph	• Select appropriate methods and tools for computing with whole numbers • Develop and use strategies to estimate the results of whole-number computations and to judge the reasonableness of such results (Pre-K – Grade 2) • Use a variety of methods and tools to compute, including mental computation and estimation. • Develop and use strategies for whole-number computations, with a focus on addition and subtraction **Data Analysis and Probability** *Understand and apply basic concepts of probability* (Grade 3 – Grade 5) • Describe and predict the likelihood of an event *Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them* (Grade 3 – Grade 5) • Represent data using bar graphs *Develop and evaluate inferences and predictions that are based on data* (Grade 3 – Grade 5) • Propose and justify conclusions and predictions that are based on data

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	graphs • Communicate ideas using mathematical vocabulary	and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs. For example, draw a bar graph in which each square in the bar graph might represent 5 pets.	and design studies to further investigate the conclusions or predictions **Algebra** *Represent and analyze mathematical situations and structures using algebraic symbols* (Pre-K – Grade 2) • Use concrete, pictorial, and verbal representations to develop an understanding of invented and conventional symbolic notations. (Grades 3 – 5) • Express mathematical relationships using equations **Problem Solving** (Pre-K – Grade 5) • Monitor and reflect on the process of mathematical problem solving • Apply and adapt a variety of appropriate strategies to solve problems **Communication** (Pre-K – Grade 5) • Communicate mathematical thinking coherently and clearly • Use the language of mathematics to express mathematical ideas precisely
Lesson 21: Organizing Multiplication Facts	• Multiplication facts practice • Fluency in	**Operations and Algebraic Thinking** *Represent and solve problems*	**Number and Operations** *Compute fluently and make reasonable estimates*

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Lesson 22: Organizing Multiplication Facts Review How can you use your knowledge of doubling a number to help you master multiplication facts?	multiplication • Use multiplication skills to find the product of two factors • Use mental math strategies (doubling) to multiply whole numbers • Locate patterns in a table to solve multiplication problems • Communicate ideas using mathematical vocabulary	*involving multiplication and division.* (Grade 3) • Determine the unknown whole number in a multiplication or division equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations 8 × ? = 48, 5 = _ ÷ 3, 6 × 6 = ?* *Multiply and divide within 100.* (Grade 3) • Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers. *Solve problems involving the four operations, and identify and explain patterns in arithmetic.* (Grade 3) • Identify arithmetic patterns (including patterns in the addition table or multiplication	(Grades 3 – 5) • Develop fluency in multiplying whole numbers • Select appropriate methods and tools for computing with whole numbers *Understand numbers, ways of representing numbers, relationships among numbers, and number systems* (Grades 3 – 5) • Describe classes of numbers according to characteristics such as the nature of their factors *Understand meanings of operations and how they relate to one another* (Grades 3 – 5) • Understand various meanings of multiplication • Understand the effects of multiplying whole numbers **Algebra** *Use mathematical models to represent and understand quantitative relationships* (Grades 3 - 5) • Model problem situations with objects and use representations such as graphs, tables, and equations to draw conclusions. *Represent and analyze mathematical situations and structures using algebraic*

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		table), and explain them using properties of operations. *For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.* *Work with equal groups of objects to gain foundations for multiplication.* (Grade 2) • Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.	*symbols* (Grades 3 – 5) • Express mathematical relationships using equations (Pre-K – Grade 2) • Use concrete, pictorial, and verbal representations to develop an understanding of invented and conventional symbolic notations. **Problem Solving** (Pre-K – Grade 5) • Monitor and reflect on the process of mathematical problem solving • Apply and adapt a variety of appropriate strategies to solve problems **Communication** (Pre-K – Grade 5) • Communicate mathematical thinking coherently and clearly • Use the language of mathematics to express mathematical ideas precisely
Lesson 23: Skip Counting by Multiples, Identify Patterns **Lesson 24:** Skip Counting by Multiples, Identify Patterns Review	• Multiplication facts practice • Fluency in multiplication • Use multiplication skills to find the product of two factors • Skip count	**Operations and Algebraic Thinking** *Gain familiarity with factors and multiples.* (Grade 4) • Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each	**Number and Operations** *Compute fluently and make reasonable estimates* (Grades 3 – 5) • Develop fluency in multiplying whole numbers • Select appropriate methods and tools for computing with whole numbers

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How can you use skip counting by multiples to find patterns on the hundreds chart and identify relationships among the patters?	• Understand multiplication as repeated addition • Identify multiples and patterns within a hundreds chart • Communicate ideas using mathematical vocabulary	of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite. *Represent and solve problems involving multiplication and division.* (Grade 3) • Determine the unknown whole number in a multiplication or division equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations 8 × ? = 48, 5 = _ ÷ 3, 6 × 6 = ?* *Multiply and divide within 100.* (Grade 3) • Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know	*Understand numbers, ways of representing numbers, relationships among numbers, and number systems* (Grades 3 – 5) • Describe classes of numbers according to characteristics such as the nature of their factors *Understand meanings of operations and how they relate to one another* (Grades 3 – 5) • Understand various meanings of multiplication • Understand the effects of multiplying whole numbers **Algebra** *Understand patterns, relations, and functions* (Grade 3 – Grade 5) • Identify and describe geometric and numeric patterns • Represent and analyze patterns *Use mathematical models to represent and understand quantitative relationships* (Grade 3-Grade 5) • Model problem situations with objects and use representations such as graphs, tables, and equations to draw conclusions. *Represent and analyze mathematical situations and structures using algebraic*

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		from memory all products of two one-digit numbers. *Solve problems involving the four operations, and identify and explain patterns in arithmetic.* (Grade 3) • Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. *For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.* *Work with equal groups of objects to gain foundations for multiplication.* (Grade 2) • Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends. **Number and Operations in Base Ten** *Understand place value.* (Grade 2) • Count within 1000; skip-count	*symbols* (Pre-K - Grade 2) • Use concrete, pictorial, and verbal representations to develop an understanding of invented and conventional symbolic notations. (Grades 3 – 5) • Express mathematical relationships using equations **Problem Solving** (Pre-K – Grade 5) • Monitor and reflect on the process of mathematical problem solving • Apply and adapt a variety of appropriate strategies to solve problems **Communication** (Pre-K – Grade 5) • Communicate mathematical thinking coherently and clearly • Use the language of mathematics to express mathematical ideas precisely

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		by 5s, 10s, and 100s.	
Lesson 25: Mental Math Strategies **Lesson 26:** Mental Math Strategies Review How can you use mental math strategies to multiply by multiples of 10 and 100?	• Multiplication facts practice • Fluently multiply one-digit numbers by 10 and 100 • Use estimation skills to arrive at conclusions • Use mental math strategies to find products • Find the products of powers of ten using mental math • Communicate ideas using mathematical vocabulary	**Operations and Algebraic Thinking** *Gain familiarity with factors and multiples.* (Grade 4) • Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite. *Represent and solve problems involving multiplication and division.* (Grade 3) • Determine the unknown whole number in a multiplication or division equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations 8 × ? = 48, 5 = _ ÷ 3, 6 × 6 = ?*	**Number and Operations** *Compute fluently and make reasonable estimates* (Grades 3 – 5) • Develop fluency with basic number combinations for multiplication and use these combinations to mentally compute related problems, such as 30 x 50 • Develop fluency in multiplying whole numbers • Develop and use strategies to estimate the results of whole-number computations and to judge the reasonableness of such results • Select and use appropriate methods and tools for computing with whole numbers *Understand meanings of operations and how they relate to one another* (Grade 3 – Grade 5) • Understand various meanings of multiplication • Understand the effects of multiplying whole numbers **Algebra** *Understand patterns, relations, and functions* (Grades 3 – 5)

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		Multiply and divide within 100. (Grade 3) • Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers. *Solve problems involving the four operations, and identify and explain patterns in arithmetic.* (Grade 3) • Solve two-step word problems using the four operations. 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. • Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. *For*	• Identify and describe geometric and numeric patterns • Represent and analyze patterns *Represent and analyze mathematical situations and structures using algebraic symbols* (Grades 3 – 5) Express mathematical relationships using equations (Pre-K - Grade 2) • Use concrete, pictorial, and verbal representations to develop an understanding of invented and conventional symbolic notations. **Problem Solving** (Pre-K – Grade 5) • Monitor and reflect on the process of mathematical problem solving • Apply and adapt a variety of appropriate strategies to solve problems **Communication** (Pre-K – Grade 5) • Communicate mathematical thinking coherently and clearly • Use the language of mathematics to express mathematical ideas precisely

		example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends. *Work with equal groups of objects to gain foundations for multiplication.* (Grade 2) • Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends. **Number and Operations in Base Ten** *Use place value understanding and properties of operations to perform multi-digit arithmetic.* (Grade 3) • Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g., 9 × 80, 5 × 60) using strategies based on place value and properties of operations. *Understand place value.* (Grade 2) Count within 1000; skip-count by 5s, 10s, and 100s.	

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Lesson 27: Knowledge of Addition and Division to Find the Mean **Lesson 28:** Knowledge of Addition and Division to Find the Mean Review How can we use our knowledge of addition and division to find the mean distance a marble travels at a given height?	• Multiplication facts practice • Fluency in addition • Add and divide whole numbers • Calculate the mean of a set of data • Find the mean in an experiment • Communicate ideas using mathematical vocabulary	**Statistics and Probability** *Summarize and describe distributions.* (Grade 6) • Summarize numerical data sets in relation to their context, such as by giving quantitative measures of center (median and/or mean) **Operations and Algebraic Thinking** *Represent and solve problems involving multiplication and division.* (Grade 3) • Determine the unknown whole number in a multiplication or division equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations 8 × ? = 48, 5 = _ ÷ 3, 6 × 6 = ?* *Multiply and divide within 100.* (Grade 3) • Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8	**Number and Operations** *Compute fluently and make reasonable estimates* (Grades 3 – 5) • Develop fluency in adding, subtracting, multiplying, and dividing whole numbers **Data Analysis and Probability** *Select and use appropriate statistical methods to analyze data* (Grades 6 – 8) • Find, use and interpret measuring of center and spread, including mean *Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them* (Grades 3 –5) • Collect data using observations and experiments • Represent data using tables **Algebra** *Represent and analyze mathematical situations and structures using algebraic symbols* (Pre-K - Grade 2) • Use concrete, pictorial, and verbal representations to develop an understanding of invented and conventional symbolic notations. (Grades 3 – 5)

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		× 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers. **Number and Operations in Base Ten** *Use place value understanding and properties of operations to perform multi-digit arithmetic.* (Grade 3) • Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction. **Measurement and Data** *Measure and estimate lengths in standard units.* (Grade 2) • Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes. *Represent and interpret data.* (Grade 2) • Generate measurement data by measuring lengths of	• Express mathematical relationships using equations **Problem Solving** (Pre-K – Grade 5) • Monitor and reflect on the process of mathematical problem solving • Apply and adapt a variety of appropriate strategies to solve problems **Communication** (Pre-K – Grade 5) • Communicate mathematical thinking coherently and clearly • Use the language of mathematics to express mathematical ideas precisely

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		several objects to the nearest whole unit, or by making repeated measurements of the same object.	
Lesson 29: Estimation in Multiplication & Division **Lesson 30:** Estimation in Multiplication & Division Review How can you use Estimation to help you solve multiplication and division problems?	• Multiplication facts practice • Fluency in multiplication and division • Calculate the mean (average) • Estimate numbers by rounding and using compatible numbers • Calculate products and quotients • Create and solve word problems • Determine the appropriate operations to use when problem solving • Understand the inverse relationship between multiplication and division	**Operations and Algebraic Thinking** *Represent and solve problems involving multiplication and division.* (Grade 3) • Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem. • Determine the unknown whole number in a multiplication or division equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations 8 × ? = 48, 5 = _ ÷ 3, 6 × 6 = ?* *Understand properties of multiplication and the relationship*	**Number and Operations** *Compute fluently and make reasonable estimates* (Grades 3 – 5) • Develop fluency in subtracting whole numbers • Develop fluency in multiplying and dividing whole numbers • Develop and use strategies to estimate the results of whole-number computations and to judge the reasonableness of such results *Understand meanings of operations and how they relate to one another* (Grades 3 – 5) • Understand various meanings of multiplication and division • Understand the effects of multiplying and dividing numbers **Data Analysis and Probability** *Select and use appropriate statistical methods to analyze data* (Grades 6 – 8) • Find use and interpret measuring of center and spread, including mean **Algebra**

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	• Identify compatible numbers • Assess the reasonableness of answers • Communicate ideas using mathematical vocabulary	*between multiplication and division.* (Grade 3) • Understand properties of multiplication and the relationship between multiplication and division. *Multiply and divide within 100.* (Grade 3) • Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers. *Solve problems involving the four operations, and identify and explain patterns in arithmetic.* (Grade 3) • Solve two-step word problems using the four operations. 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	*Represent and analyze mathematical situations and structures using algebraic symbols* (Pre-K – Grade 2) • Use concrete, pictorial, and verbal representations to develop an understanding of invented and conventional symbolic notations. (Grades 3 – 5) • Express mathematical relationships using equations **Problem Solving** (Pre-K – Grade 5) • Monitor and reflect on the process of mathematical problem solving • Apply and adapt a variety of appropriate strategies to solve problems **Communication** (Pre-K – Grade 5) • Communicate mathematical thinking coherently and clearly • Use the language of mathematics to express mathematical ideas precisely

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		rounding. **Number and Operations in Base Ten** *Generalize place value understanding for multi-digit whole numbers.* (Grade 4) • Use place value understanding to round multi-digit whole numbers to any place.	
Lesson 31: Knowledge of Place Value **Lesson 32:** Knowledge of Place Value Review How can you use your knowledge of *Place Value* to compare numbers through the millions and put them in the correct order?	• Multiplication facts practice • Find the products of powers of ten using mental math • Identify the place and value of numbers through the millions • Compare and order numbers through the millions • Communicate ideas using mathematical vocabulary	**Operations in Base Ten** *Generalize place value understanding for multi-digit whole numbers.* (Grade 4) • Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons. • Use place value understanding to round multi-digit whole numbers to any place. **Operations and Algebraic Thinking**	**Number and Operations** *Compute fluently and make reasonable estimates* (Grade 3 – Grade 5) • Develop fluency in multiplying whole numbers • Develop fluency with basic number combinations for multiplication and use these combinations to mentally compute related problems, such as 30 x 50 *Understand numbers, ways of representing numbers, relationships among numbers, and number systems* (Grade 3 – Grade 5) • Understand the place-value structure of the base-ten number system and be able to represent and compare whole numbers

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		Multiply and divide within 100. (Grade 3) • Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.	**Algebra** *Represent and analyze mathematical situations and structures using algebraic symbols* (Pre-K – Grade 2) • Use concrete, pictorial, and verbal representations to develop an understanding of invented and conventional symbolic notations. (Grades 3 – 5) • Express mathematical relationships using equations **Problem Solving** (Pre-K – Grade 5) • Monitor and reflect on the process of mathematical problem solving • Apply and adapt a variety of appropriate strategies to solve problems **Communication** (Pre-K – Grade 5) • Communicate mathematical thinking coherently and clearly • Use the language of mathematics to express mathematical ideas precisely
Lesson 33: Computational Skills of Multiplying **Lesson 34:** Computational	• Multiplication facts practice • Fluency in multiplication • Compute products of two and three-	**Number and Operations in Base Ten** *Use place value understanding and properties of operations to perform multi-digit arithmetic.* (Grade 4)	**Number and Operations** *Compute fluently and make reasonable estimates* (Grade 3 – Grade 5) • Develop fluency in multiplying and adding whole numbers

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Skills of Multiplying Review How can you use *Computational Skills* of Multiplying a 3-digit number by a 2-digit number to solve problems?	digit numbers • Find the sum of two partial products • Understand the multiplication algorithm • Use mental math strategies to find products of two and three-digit numbers • Estimate products • Use problem solving strategies • Communicate ideas using mathematical vocabulary	• 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. **Operations and Algebraic Thinking** *Use the four operations with whole numbers to solve problems.* (Grade 4) • 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. *Multiply and divide within 100.* (Grade 3) • Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and	• Develop fluency with basic number combinations for multiplication and division • Develop and use strategies to estimate the results of whole-number computations and to judge the reasonableness of such results (Pre-K – Grade 2) • Use a variety of methods and tools to compute, including mental computation and estimation. *Understand meanings of operations and how they relate to one another* (Grade 3 – Grade 5) • Understand various meanings of multiplication and division • Understand the effects of multiplying and dividing whole numbers *Represent and analyze mathematical situations and structures using algebraic symbols* (Pre-K – Grade 2) • Use concrete, pictorial, and verbal representations to develop an understanding of invented and conventional symbolic notations. **Problem Solving** (Pre-K – Grade 5) • Express mathematical relationships using equations • Monitor and reflect on the process of

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		division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers. *Solve problems involving the four operations, and identify and explain patterns in arithmetic.* (Grade 3) • Solve two-step word problems using the four operations. 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.	mathematical problem solving • Apply and adapt a variety of appropriate strategies to solve problems **Communication** (Pre-K – Grade 5) • Communicate mathematical thinking coherently and clearly • Use the language of mathematics to express mathematical ideas precisely
Lesson 35: Computational Skills of Dividing **Lesson 36:** Computational Skills of Dividing Review How can you use *Computational*	• Multiplication facts practice • Fluency in multiplication and division • Use estimation skills to arrive at conclusions • Use mental math strategies to find	**Operations and Algebraic Thinking** *Use the four operations with whole numbers to solve problems.* (Grade 4) • 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	**Number and Operations** *Compute fluently and make reasonable estimates* (Grade 3 – Grade 5) • Develop fluency in addition, subtraction, multiplication, and division of whole numbers • Develop fluency with basic number combinations for multiplication and division

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Skills of Dividing a 3-digit number by a 2-digit number to solve problems?	products and quotients • Divide three-digit numbers by two-digit numbers • Understand the division algorithm • Use problem solving strategies • Communicate ideas using mathematical vocabulary	represent the problem, distinguishing multiplicative comparison from additive comparison. *Multiply and divide within 100.* (Grade 3) • Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers. *Solve problems involving the four operations, and identify and explain patterns in arithmetic.* (Grade 3) • Solve two-step word problems using the four operations. 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. **Numbers and Operations in Base**	• Develop and use strategies to estimate the results of whole-number computations and to judge the reasonableness of such results (Pre-K – Grade 2) • Use a variety of methods and tools to compute, including mental computation and estimation *Understand meanings of operations and how they relate to one another* (Grades 3 – 5) • Understand various meanings of multiplication and division • Understand the effects of multiplying and dividing whole numbers **Algebra** (*Represent and analyze mathematical situations and structures using algebraic symbols* (Pre-K – Grade 2) • Use concrete, pictorial, and verbal representations to develop an understanding of invented and conventional symbolic notations. (Grades 3 – 5) • Express mathematical relationships using equations **Problem Solving** (Pre-K – Grade 5) • Monitor and reflect on the process of mathematical problem solving

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		Ten *Use place value understanding and properties of operations to perform multi-digit arithmetic.* (Grade 4) • 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.	• Apply and adapt a variety of appropriate strategies to solve problems **Communication** (Pre-K – Grade 5) • Communicate mathematical thinking coherently and clearly • Use the language of mathematics to express mathematical ideas precisely
Lesson 37: Ordered Pairs **Lesson 38:** Ordered Pairs Review How can you use *Ordered Pairs* to identify locations on a grid?	• Multiplication facts practice • Locate points on a coordinate grid • Use ordered pairs to plot points • Communicate ideas using mathematical vocabulary	**Geometry** *Graph points on the coordinate plane to solve real-world and mathematical problems.* (Grade 5) • Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation. **Operations and Algebraic Thinking**	**Number and Operations** *Compute fluently and make reasonable estimates* (Grades 3 – 5) • Develop fluency in multiplying whole numbers **Geometry** *Specify locations and describe spatial relationships using coordinate geometry and other representational systems* (Grades 3 – 5) • Create and use appropriate graphical representations (coordinate grid)

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		Multiply and divide within 100. (Grade 3) • Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.	• Find the distance between points along horizontal and vertical lines of a coordinate system **Problem Solving** (Pre-K – Grade 5) • Monitor and reflect on the process of mathematical problem solving • Apply and adapt a variety of appropriate strategies to solve problems **Communication** (Pre-K – Grade 5) • Communicate mathematical thinking coherently and clearly • Use the language of mathematics to express mathematical ideas precisely
Lesson 39: Strategy to Solve Multiplication and Division **Lesson 40:** Strategy to Solve Multiplication and Division Review Which strategy can you use to solve multiplication and division problems?	• Multiplication facts practice • Compute fluently • Add, subtract, multiply, and divide whole numbers • Use estimation skills to arrive at conclusions • Create and solve word problems • Communicate ideas using mathematical	**Operations and Algebraic Thinking** *Multiply and divide within 100.* (Grade 3) • Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers. *Solve problems involving the four*	**Number and Operations** *Compute fluently and make reasonable estimates* (Grades 3 – 5) • Develop fluency in adding, subtracting, multiplying and dividing whole numbers • Develop and use strategies to estimate the results of whole-number computations and to judge the reasonableness of such results • Select appropriate methods and tools for computing with whole numbers from among mental computation, estimation, calculators,

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	vocabulary	*operations, and identify and explain patterns in arithmetic.* (Grade 3) • Solve two-step word problems using the four operations. 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.	and paper and pencil according to the context and nature of the computation and use the selected method or tools **Algebra** *Represent and analyze mathematical situations and structures using algebraic symbols* (Pre-K – Grade 2) • Use concrete, pictorial, and verbal representations to develop an understanding of invented and conventional symbolic notations. (Grades 3 – 5) • Express mathematical relationships using equations **Problem Solving** (Pre-K – Grade 5) • Monitor and reflect on the process of mathematical problem solving • Apply and adapt a variety of appropriate strategies to solve problems • Build new mathematical knowledge through problem solving **Communication** (Pre-K – Grade 5) • Communicate mathematical thinking coherently and clearly • Use the language of mathematics to express mathematical ideas precisely

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