Curriculum Map: iReady Classroom Mathematics

Course: MATH 2 Sub-topic: General

Grade(s): 2

Course Description: The course covers the following domains:

Algebra and Algebraic Thinking

Numbers and Operations and Base 10

Geometry

Measurement and Data

Unit: Unit 1: Number within 20: addition, subtraction, data

Timeline: Week 1 to 6

Unit Description: Numbers Within 20: Addition, Subtraction, and Data

This unit extends students' understanding of adding and subtracting within 20. Students preview the skills they will be learning in this unit and assess what they know and do not know about them. Students record their progress after completing each lesson and reflect on their learning at the end of the unit.

Unit Big Ideas:

The major themes of this unit are:

- knowing different strategies such as making a ten, and doubles plus one
- use what you know about the relationship between addition and subtraction to help you solve problems
- organize data into graphs to help you answer questions about the data
- knowing how to model a problem with pictures or diagrams can help you solve the problem

STANDARDS:

STANDARDS

NATIONAL: US Common Core State Standards (2010)

MA.2.OA.A.1 (Advanced)	Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.	
MA.2.OA.B.2 (Advanced)	Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers. See standard 1.OA.6 for a list of mental strategies.	
MA.2.MD.D.10 (Advanced)	Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.	

 (* standards consolidated from Topic level)

Topic: Lesson 0: Lessons for the first 5 days

Core Lesson Description: Lesson 0 was developed as a way to review key concepts to prepare for the start of the school year and familiarize students with the flow of the Try-Discuss-Connect instructional routine that will be used throughout the year. Lesson 0 is built around mathematical concepts, vocabulary, and approaches that are accessible to students from earlier grades, which allows students to focus on important classroom habits and learning objectives while reviewing prerequisite skills connected to the first unit of instruction.

Core Lesson Student Learning Objectives:

Routine Objectives

• Use the Try-Discuss-Connect routine to establish best practices during an i-Ready Classroom Mathematics lesson.

• Have students learn how to make sense of problems, explain their thinking, and discuss strategies used to solve problems.

• Help students understand how to appropriately critique and compare the solution strategies. • Establish hand signals such as thumbsup or thumbs-down for students to signal agreement or disagreement with strategies and student responses, as well as provide the teacher with formative feedback.

• Help students develop good use of mathematical language and support sense-making as they learn to ask good questions, clearly describe their thinking to others, and reword and refine mathematical ideas.

• Apply math knowledge and modeling techniques to new, similar problems.

Mathematical Objectives

• Find missing number partners for 10.

• Use the strategy of making ten to add numbers within 20. • Make a ten to subtract single-digit numbers from teen numbers.

Core Lesson Essential Questions:

CCSS Focus Domain Operations and Algebraic Thinking Cluster C. Add and subtract within 20. Standards 1.OA.C.6 Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 1 6 5 8 1 2 1 4 5 10 1 4 5 14); decomposing a number leading to a ten (e.g., 13 2 4 5 13 2 3 2 1 5 10 2 1 5 9); using the relationship between addition and subtraction (e.g., knowing that 8 1 4 5 12, one knows 12 2 8 5 4); and creating equivalent but easier or known sums (e.g., adding 6 1 7 by creating the known equivalent 6 1 6 1 1 5 12 1 1 5 13). Standards for Mathematical Practice (SMP) 1 Make sense of problems and persevere in solving them. 2 Reason abstractly and quantitatively. 3 Construct viable arguments and critique the reasoning of others. 4 Model with mathematics. 5 Use appropriate tools strategically. 6 Attend to precision. 7 Look for and make use of structure. 8 Look for and express regularity in repeated reasoning.

Core Lesson Big Ideas:

Students will emerge from the first five days having established an understanding of the Try-Discuss-Connect routine. This routine naturally integrates the Standards for Mathematical Practice into the lesson design. The routine encourages mathematical discourse; it provides the time to focus on questions, responses, and resulting discussions; and it helps students develop critical thinking skills, construct viable arguments, and critique the reasoning of others. Additional language routines, developed to promote mathematical and linguistic sense-making, are woven throughout the Try-DiscussConnect routine.

Core Lesson Key Terminology & Definitions:

make a ten a strategy that uses combinations of numbers that add to ten.

Topic: Lesson 1: Mental Math Strategies for Addition

Core Lesson Description:

In this lesson students build on the foundations laid in Grade 1 for applying mental strategies to addition within 20. Students refine their understanding of the commutative and associative properties. This mental flexibility will assist students later in Grade 2 as they apply number properties to two- and three-digit numbers. For example, students realize that when solving 4 1 9, they can start with the 9 because it is closer to 10 and then add 4.

Core Lesson Student Learning Objectives:

Content Objectives

• Use the strategies of counting on, making a ten, and doubles plus one to add two one-digit numbers.

• Interpret models such as pictures, equations, and open number lines that represent the reasoning behind various strategies.

• Use addition strategies to represent and solve word problems. Language Objectives

• Write and solve equations to represent word problems involving adding two one-digit numbers.

• Draw an open number line to represent making ten to add.

• Listen to the ideas of others and compare their strategies.

Core Lesson Key Terminology & Definitions:

• add to put together two or more quantities, to find the total of two or more numbers, or to find how many in all.

• equation a mathematical statement that uses an equal sign (5) to show that two things have the same value.

• open number line a straight line with only the numbers important to a problem labeled.

• sum the result of addition.

• unknown number a number that is missing or not known in a problem, and is often shown as a box or a symbol. Review the following key term.

• addend a number being added.

• count on start with one addend and count to find a total.

STANDARDS

NATIONAL: US Common Core State Standards (2010)

MA.2.OA.A.1 (Advanced) Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

MA.2.OA.B.2 (Advanced) Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.

See standard 1.OA.6 for a list of mental strategies.

Topic: Lesson 2: Mental Math Strategies for Subtraction

Core Lesson Description: In this lesson children use several strategies and models to subtract single digit numbers from teen numbers. They use number paths to relate counting up, counting back, and making a ten by subtracting in parts that allow them to make a ten and then subtract the rest. They relate these strategies to similar strategies they used for addition. In Grade 2 children add and subtract within 100. They use strategies based on place value, properties, and the relationship between addition and subtraction.

Core Lesson Student Learning Objectives:

Content Objectives

• Use the strategies of counting on, making a ten, and doubles plus one to add two one-digit numbers.

• Interpret models such as pictures, equations, and open number lines that represent the reasoning behind various strategies.

• Use addition strategies to represent and solve word problems.

Language Objectives

• Write and solve equations to represent word problems involving adding two one-digit numbers.

• Draw an open number line to represent making ten to add.

• Listen to the ideas of others and compare their strategies.

Core Lesson Key Terminology & Definitions:

• add to put together two or more quantities, to find the total of two or more numbers, or to find how many in all.

• equation a mathematical statement that uses an equal sign (5) to show that two things have the same value.

• open number line a straight line with only the numbers important to a problem labeled. • sum the result of addition.

• unknown number a number that is missing or not known in a problem, and is often shown as a box or a symbol. Review the following key term.

• addend a number being added.

• count on start with one addend and count to find a total.

STANDARDS

NATIONAL: US Common Core State Standards (2010)

MA.2.OA.A.1 (Advanced) Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

MA.2.OA.B.2 (Advanced) Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.

See standard 1.OA.6 for a list of mental strategies.

Topic: Lesson 3: Solve One-Step Word Problems

Core Lesson Description: In this lesson students represent and solve one-step word problem situations using pictures, models, and equations. Fact families become a structure for finding an unknown as students recognize the relationship between the difference in a subtraction equation and an addend in an addition equation.

Core Lesson Student Learning Objectives:

Content Objectives

• Analyze one-step addition and subtraction word problems and write equations to represent the problems.

• Use fact families as a strategy to solve one-step problems and build number sense.

• Interpret models that represent one-step problems. Language Objectives

• Draw a tape diagram to represent and solve a word problem.

• Write an addition or subtraction fact to represent a word problem.

Core Lesson Key Terminology & Definitions:

• equal sign (5) a symbol that means is the same value as.

Review the following key term.

• equation a mathematical statement that uses an equal sign (5) to show that two things have the same value.

STANDARDS

NATIONAL: US Common Core State Standards (2010)

MA.2.OA.A.1 (Advanced) Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

Topic: Lesson 4: Draw and Use Bar Graphs and Pictures

Core Lesson Description: In Grade 2 students organize and represent data in more than one way. They recognize the kinds of data that are represented by picture graphs and bar graphs and use data to solve put-together, take-apart, and compare problems within 20. In this lesson students organize data into a tally chart and table in order to use it for making a graph. They represent the data in both a picture graph and bar graph, using a scale in a one-to-one correspondence with the data. Students recognize the relationship of the two forms of graphs and how the shape of the data is consistent when in either form.

Core Lesson Student Learning

Content Objectives

Objectives:

• Collect data to display in a bar graph or picture graph.

• Compare data in a tally chart, table, picture graph, and bar graph. • Interpret graphs by reading and comparing the data shown in the graph.

• Complete a picture graph and bar graph.

• Create a bar graph from a given set of data.

• Solve addition and subtraction word problems within 20, based on data. Language Objectives
• Compare a bar graph and a picture graph for the same data.

• Use key mathematical vocabulary terms picture graph, bar graph, and data in discussions.

Core Lesson Key Terminology & Definitions:

• bar graph a data display in which bars are used to show the number of items in each category.

• picture graph a data display in which pictures are used to show data.

Review the following key term.

• data a set of collected information.

STANDARDS

NATIONAL: US Common Core State Standards (2010)

MA.2.MD.D.10 (Advanced)	Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.

Topic: Lesson 5: Solve Two-Step Word Problems

Core Lesson Description: In Grade 2 students expand on what they have learned about solving one-step problems by seeing a two-step problem as a sequence of one-step problems. In this lesson students solve two-step problems using pictures, diagrams, and an open number line and then describe the situation as an equation.

Core Lesson Student Learning Objectives:

Content Objectives

• Analyze two-step problems to determine the series of operations needed to solve them.

• Interpret models that represent a twostep problem. Language Objectives

• Draw two bar models to represent a two-step problem.

• Draw a picture to model a two-step word problem.

• Restate what information a word problem is asking for.

Core Lesson Key Terminology & Definitions:

There is no new vocabulary.

Review the following key terms.

• count on start with one addend and count to find a total.

• subtract to take from, take apart, or compare to find the difference.

STANDARDS

NATIONAL: US Common Core State Standards (2010)

MA.2.OA.A.1 (Advanced)	Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
MA.2.OA.B.2 (Advanced)	Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.

See standard 1.OA.6 for a list of mental strategies.

Unit: Unit 2: Numbers Within 100. Addition, Subtraction, Time and Money

Timeline: Week 7 to 12

Unit Description: Unit 2: Numbers Within 100. Addition, Subtraction, Time and Money

Unit Big Ideas:

You can use what you know about tens and ones to help you add numbers by place value.

Adding or subtracting from a tens number can make the problem easier. Knowing how to break apart numbers to get you to the nearest ten can help you solve addition and subtraction problems.

Models help you represent word problems. Knowing how to create a good model will help you solve one- or two-step word problems.

You can use what you know about skip-counting by fives to help you tell time to the nearest 5 minutes.

STANDARDS:

STANDARDS

NATIONAL: US Common Core State Standards (2010)

MA.2.OA.A.1 (Advanced)	Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.	
MA.2.NBT.B.5 (Advanced)	Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.	
MA.2.NBT.B.9 (Advanced)	Explain why addition and subtraction strategies work, using place value and the properties of operations. Explanations may be supported by drawings or objects.	
MA.2.MD.C.7 (Advanced)	Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.	
MA.2.MD.C.8 (Advanced)	Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately.	

 (* standards consolidated from Topic level)

Topic: Lesson 6: Add two-Digit Numbers

Core Lesson Description: In this lesson students add two-digit numbers that require composing a ten. They break apart numbers into tens and ones and record the addition of partial addends before calculating the sum. Students interpret picture models, number models, and an open number line to understand addition of two-digit numbers.

Core Lesson Student Learning Objectives:

- Break apart two-digit numbers into tens and ones as a place-value strategy for adding.
- Recognize that in adding, tens are added to tens and ones to ones.
- Determine when grouping a ten is necessary and carry out the regrouping to find a sum.

Core Lesson Key Terminology & Definitions:

- regroup to put together or break apart ones, tens, or hundreds. For example, 10 ones can be regrouped as 1 ten, or 1 hundred can be regrouped as 10 ones. Review the following key term.
- sum the result of addition.

STANDARDS

NATIONAL: US Common Core State Standards (2010)

MA.2.OA.A.1 (Advanced) Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together,

	taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
MA.2.NBT.B.5 (Advanced)	Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
MA.2.NBT.B.9 (Advanced)	Explain why addition and subtraction strategies work, using place value and the properties of operations. Explanations may be supported by drawings or objects.

Topic: Lesson 7: Subtract Two-Digit Numbers

Core Lesson Description: In this lesson students subtract a two-digit number from another two-digit number by counting back to a ten and by decomposing a ten. Students interpret picture models, number models, and open number lines to understand subtraction of two-digit numbers.

Core Lesson Student Learning Objectives:

Content Objectives

• Decompose a ten as a strategy for subtracting.

• Recognize that addition can be used to solve a subtraction problem.

• Evaluate mental strategies for subtracting a number from a two-digit number

Core Lesson Key Terminology & Definitions:

There is no new vocabulary. Review the following key terms.

• difference the result of subtraction.

• regroup to put together or break apart ones, tens, or hundreds. For example, 10 ones can be regrouped as 1 ten, or 1 hundred can be regrouped as 10 tens.

STANDARDS

NATIONAL: US Common Core State Standards (2010)

MA.2.OA.A.1 (Advanced)	Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
MA.2.NBT.B.5 (Advanced)	Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
MA.2.NBT.B.9 (Advanced)	Explain why addition and subtraction strategies work, using place value and the properties of operations. Explanations may be supported by drawings or objects.

Topic: Lesson 8: Use Addition and Subtraction Strategies with Two-Digit Numbers

Core Lesson Description: In this lesson children apply their understanding of models and strategies explored in previous lessons to adding two-digit numbers. They develop conceptual understanding that in adding two-digit numbers, one adds tens and tens, ones and ones, and that sometimes it is necessary to compose a new ten. They will learn the standard algorithm in future grades.

Core Lesson Student Learning Objectives:

• Add 2 two-digit numbers with and without regrouping.

• Compose a new ten when adding ones that total 10 or greater.

• Develop strategies based on place value for adding two-digit numbers.

Core Lesson Key Terminology & Definitions:

There is no new vocabulary. Review the following key terms.

• digit- a symbol used to write numbers. The digits are 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9. • ones single units or objects.

• place value- the value of a digit based on its position in a number. For example, the 2 in 24 is in the tens place and has a value of 2 tens or 20.

• tens- groups of 10 ones.

STANDARDS

NATIONAL: US Common Core State Standards (2010)

MA.2.OA.A.1 (Advanced)	Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
MA.2.NBT.B.5 (Advanced)	Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
MA.2.NBT.B.9 (Advanced)	Explain why addition and subtraction strategies work, using place value and the properties of operations. Explanations may be supported by drawings or objects.

Topic: Lesson 9: Solve Word Problems with Two-Digit Numbers

Core Lesson Description: In this lesson students interpret and solve one- and two-step word problems involving two-digit numbers. They utilize concepts of fact families by representing a problem using more than one equation. They build fluency with representing and solving word problems using models such as number bonds, bar models, open number lines, and equations.

Core Lesson Student Learning Objectives:

• Analyze word problems to determine the operation needed to solve them.

• Apply the use of fact families as a strategy to solve one-step problems and build number sense.

• Interpret models that represent a onestep problem with two-digit numbers.

Core Lesson Key Terminology & Definitions: There is no new vocabulary. Review the following key terms.

• difference- the result of subtraction.

• sum- the result of addition.

STANDARDS

NATIONAL: US Common Core State Standards (2010)

MA.2.OA.A.1 (Advanced)	Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
MA.2.NBT.B.5 (Advanced)	Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
MA.2.NBT.B.9 (Advanced)	Explain why addition and subtraction strategies work, using place value and the properties of operations. Explanations may be supported by drawings or objects.

Topic: Lesson 10: Solve World Problems Using Money

Core Lesson Description: In this lesson students learn to identify, name, and count the values of pennies, nickels, dimes, and quarters. They count on to find the value of a set of coins and they combine coins to equal the value of other coins. Students determine the coins needed to equal one dollar, and use notation to label dollars and cents. Students find the value of sets of bills in denominations of $5, $10, $20, $50, and $100. They use various models, strategies, and equations to solve one- and two-step word problems involving money

Core Lesson Student Learning Objectives:

Content Objectives

• Recognize and name the coins penny, nickel, dime, and quarter.

• Know the value of coins and paper denominations.

• Count the amount of money represented by a set of coins or bills.

Core Lesson Key Terminology & Definitions:

Lesson Vocabulary

• cent (¢) the smallest unit of money in the U.S. One penny has a value of 1 cent. 100 cents is equal to 1 dollar. • dime a coin with a value of 10 cents (10¢).

• dollar ($) a unit of money in the U.S. There are 100 cents in 1 dollar ($1).

• nickel a coin with a value of 5 cents (5¢).

• penny a coin with a value of 1 cent (1¢).

• quarter a coin with a value of 25 cents (25¢).

STANDARDS

NATIONAL: US Common Core State Standards (2010)

MA.2.MD.C.8 (Advanced)	Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately.

Topic: Lesson 11: Tell and Write Time

Core Lesson Description:

In this lesson students read an analog and a digital clock to the nearest 5 minutes. They recognize that the structure of an analog clock enables them to use skip-counting in order to read or place the minute hand. Students differentiate between the hour and minute hands. They draw clock hands to indicate two different times and to show the number of minutes that have passed between those times. Students explore the concept of am and pm, and determine whether an event occurs in an am or pm time.

Core Lesson Student Learning Objectives:

• Read time to the nearest 5-minute interval.

• Write time to 5-minute intervals using proper notation.

• Show time on an analog clock to 5-minute intervals using proper hour-hand and minute-hand placement.

• Determine when a digital clock should read am or pm

Core Lesson Key Terminology & Definitions:

• am (or a.m.)- the time from midnight until before noon.

• pm (or p.m.)- the time from noon until before midnight.

• skip-count- count by a number other than ones, such as count by twos, fives, tens, or hundreds. Review the following key terms.

• digital clock- a clock that uses digits to show the time.

• hour (h) - a unit of time. There are 60 minutes in 1 hour.

• hour hand - the shorter hand on a clock. It shows hours.

• minute (min) - a unit of time. There are 60 minutes in 1 hour.

• minute hand - the longer hand on a clock. It shows minutes.

STANDARDS

NATIONAL: US Common Core State Standards (2010)

MA.2.MD.C.7 (Advanced)	Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.

Unit: Unit 3: Numbers Within 1,000: Place Value Addition and Subtraction

Timeline: 9 Weeks

Unit Description: The major themes of this unit are:

• The value of a digit in a number depends on its place in the number. Knowing about place value will help you determine the total value of a number and will help you read, write, and compare numbers.

• You can use what you know about place value to mentally add 10 or 100 to numbers or subtract 10 or 100 from numbers.

• Knowing about place value will help you break apart numbers as a strategy for adding or subtracting.

STANDARDS:

STANDARDS

NATIONAL: US Common Core State Standards (2010)

MA.2.NBT.A.1 (Advanced)	Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases:	
MA.2.NBT.A.1.A (Advanced)	100 can be thought of as a bundle of ten tens - called a "hundred."	
MA.2.NBT.A.1.B (Advanced)	The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).	
MA.2.NBT.A.2 (Advanced)	Count within 1000; skip-count by 5s, 10s, and 100s.	
MA.2.NBT.A.3 (Advanced)	Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.	
MA.2.NBT.A.4 (Advanced)	Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and	
MA.2.NBT.B.7 (Advanced)	Add and subtract within 1000. Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.	
MA.2.NBT.B.8 (Advanced)	Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.	
MA.2.NBT.B.9 (Advanced)	Explain why addition and subtraction strategies work, using place value and the properties of operations. Explanations may be supported by drawings or objects.	

 (* standards consolidated from Topic level)

Topic: Lesson 12: Understand Three Digit Numbers

Core Lesson Description: In this lesson children explore the concept of ten as 10 ones by composing and decomposing, counting, recording, and comparing multiple groups of ten. They reason that 10 can be shown as one group of 10 or as 10 individual ones and compare numbers expressed in the two forms. Concepts in this lesson lay the groundwork for counting up to 120, understanding that the two digits in two-digit numbers represent a number of tens and a number of ones, and understanding adding and subtracting multiples of ten.

Core Lesson Student Learning Objectives:

Content Objectives

• Identify ones, tens, and hundreds in a three-digit number.

• Interpret models to determine the combinations of hundreds, tens, and ones in a number.

• Write a three-digit number in terms of varied combinations of hundreds, tens, and ones.

Language Objectives

• Tell how many hundreds, tens, and ones are in a given three-digit number.

• Tell how many tens are in 100 and in 200.

Core Lesson Key Terminology & Definitions:

• hundreds groups of 10 tens.

• place value the value assigned to a digit based on its position in a number. For example, the 2 in 324 is in the tens place and has a value of 2 tens or 20. Review the following key terms.

• digit a symbol used to write numbers. The digits are 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9.

• ones single units or objects.

• skip-count count by a number other than ones, such as count by twos, fives, tens, or hundreds.

• tens groups of 10 ones.

STANDARDS

NATIONAL: US Common Core State Standards (2010)

MA.2.NBT.A.1 (Advanced)	Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases:
MA.2.NBT.A.1.A (Advanced)	100 can be thought of as a bundle of ten tens - called a "hundred."
MA.2.NBT.A.1.B (Advanced)	The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).

Topic: Lesson 13: Read and Write Three Digit Numbers

Core Lesson Description:

In Grade 2 place value with two-digit numbers is reinforced as students add and subtract two-digit numbers. In the previous lesson, students used models to recognize one hundred as 100 ones or 10 tens and to write numbers in charts in order to emphasize the relationship between the digit in a number and its value. In this lesson, students continue to make sense of the place-value system through active involvement. They recognize a digit as a symbol that tells the number of groups of hundreds, tens, or ones in a number, and then they learn to read the numbers accurately.

Core Lesson Student Learning Objectives:

Content Objectives

• Identify the place value of each digit in a three-digit number.

• Model three-digit numbers.

• Interpret a model and write the number value.

Language Objectives

• Read three-digit numbers aloud.

• Write three-digit numbers in expanded form.

• Write a three-digit number shown with base-ten blocks.

Core Lesson Key Terminology & Definitions:

• expanded form a way a number is written to show the place value of each digit. For example, 249 5 200 1 40 1 9. Review the following key terms.

• digit a symbol used to write numbers. The digits are 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9.

• place value the value assigned to a digit based on its position in a number. For example, the 2 in 324 is in the tens place and has a value of 2 tens or 20.

STANDARDS

NATIONAL: US Common Core State Standards (2010)

MA.2.NBT.A.1	Understand that the three digits of a three-digit number represent

(Advanced)	amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases:
MA.2.NBT.A.1.A (Advanced)	100 can be thought of as a bundle of ten tens - called a "hundred."
MA.2.NBT.A.1.B (Advanced)	The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).
MA.2.NBT.A.3 (Advanced)	Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.

Topic: Lesson 14: Compare Three Digit Numbers

Core Lesson Description: In Grade 2 students expand their understanding of numbers and place value as they explore three-digit numbers. They model, read, and write three-digit numbers in various forms, attending to the additional place-value position of the hundreds. Students further explore the concepts of equality and inequality as they measure and compare lengths. In this lesson students compare threedigit numbers through picture models, charts, and by using the terms greater than and less than. Numbers are applied to a variety of settings, extending the concept of number beyond physical quantity. Students model situations involving inequalities using the appropriate symbol . or ,.

Core Lesson Student Learning Objectives: Content Objectives

• Evaluate models of three-digit numbers to determine whether numbers are greater than, less than, or equal to each other.

• Express equalities and inequalities using proper notation.

• Solve problems involving inequalities and justify solutions. Language Objectives

• Tell which of 2 three-digit numbers is greater and which is lesser.

• Write inequalities to compare three-digit numbers using . and , symbols.

• Listen to the ideas of others and ask questions to clarify

Core Lesson Key Terminology & Definitions: • greater than symbol (.) a symbol used to compare two numbers when the first is greater than the second.

• less than symbol (,) a symbol used to compare two numbers when the first is less than the second. Review the following key terms.

• compare to decide if numbers, amounts, or sizes are greater than, less than, or equal to each other.

• equal sign (5) a symbol that means is the same value as

STANDARDS

NATIONAL: US Common Core State Standards (2010)

MA.2.NBT.A.3 (Advanced)	Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.
MA.2.NBT.A.4 (Advanced)	Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.

Topic: Lesson 15: Mental Addition and Subtraction

Core Lesson Description: In Grade 2 students are expected to extend their fluency to counting, adding, and subtracting with three-digit numbers. They develop mental math strategies for addition and subtraction, and they recognize number patterns to solve problems. In this lesson students will apply counting by fives and tens from 0 to 60 to skip-counting by fives, tens, and hundreds within 1,000. They will relate counting by fives, tens, and hundreds to addition and subtraction with two- and three-digit numbers.

Core Lesson Student Learning Objectives: Content Objectives

• Skip-count by hundreds within 1,000 to add and subtract.

• Skip-count by fives and tens from two- and three-digit numbers.

• Mentally add 10 or 100 to a given number 100–900.

• Mentally subtract 10 or 100 from a given number 100–900. Language Objectives

• Tell and write skip-counted numbers in order.

• Explain patterns exhibited in the numerals of skip-counted numbers.

• Describe situations where skip-counting by fives, tens, and hundreds is useful.

• Describe situations where mentally adding or subtracting 10 or 100 is useful.

Core Lesson Key Terminology & Definitions:

There is no new vocabulary.

Review the following key terms.

• difference the result of subtraction.

• regroup to put together or break apart ones, tens, or hundreds. For example, 10 ones can be regrouped as 1 ten, or 1 hundred can be regrouped as 10 tens.

• skip-count count by a number other than ones, such as count by twos, fives, tens, or hundreds.

• sum the result of addition

STANDARDS

NATIONAL: US Common Core State Standards (2010)

MA.2.NBT.A.2 (Advanced)	Count within 1000; skip-count by 5s, 10s, and 100s.
MA.2.NBT.B.8 (Advanced)	Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.

Topic: Lesson 16: Add Three Digit Numbers

Core Lesson Description:

In Grade 2 students extend their understanding of numbers and place value as they explore three-digit addition and subtraction. They model three-digit numbers and write them in expanded form. Students fluently skip-count by hundreds and tens using that skill to count on when adding. In this lesson students add three-digit numbers with and without regrouping a hundred or a ten. They break apart numbers to add and record the addition of partial addends before calculating the sum. Students interpret picture models, number models, and an open number line to understand addition of multi-digit numbers. They apply models to addition and select models they find most meaningful.

Core Lesson Student Learning Objectives:

Content Objectives

• Break apart three-digit numbers as a place-value strategy for adding.

• Recognize that in addition, hundreds are added to hundreds, tens are added to tens, and ones are added to ones.

• Determine when regrouping a hundred or a ten is necessary and carry out the regrouping to find the sum.

Language Objectives

• Write two numbers in a place-value chart to find their sum.

• Write two numbers in expanded notation to find their sum.

• Record partial sums as a step toward finding the sum of two numbers.

Core Lesson Key Terminology & Definitions:

There is no new vocabulary.

Review the following key terms.

• regroup to put together or break apart ones, tens, or hundreds. For example, 10 ones can be regrouped as 1 ten, or 1 hundred can be regrouped as 10 tens.

• sum the result of addition.

STANDARDS

NATIONAL: US Common Core State Standards (2010)

MA.2.NBT.A.3 (Advanced)	Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.
MA.2.NBT.B.7 (Advanced)	Add and subtract within 1000. Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.
MA.2.NBT.B.8 (Advanced)	Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.
MA.2.NBT.B.9 (Advanced)	Explain why addition and subtraction strategies work, using place value and the properties of operations. Explanations may be supported by drawings or objects.

Topic: Lesson 17: Subtract Three Digit Numbers

Core Lesson Description: In Grade 2 students subtract two- and three-digit numbers with and without regrouping. They use varied models to represent subtraction and connect models and strategies to a written expression. In this lesson students subtract threedigit numbers with and without regrouping a hundred or a ten. They analyze subtraction problems to determine when a ten or hundred needs to be decomposed before subtracting. Students interpret picture models, number models, and an open number line to understand subtraction of multi-digit numbers. They apply models to subtraction and select models they find most meaningful.

Core Lesson Student Learning Objectives: Content Objectives

• Determine when regrouping a ten or a hundred is necessary to subtract, and carry out the regrouping to find the difference.

• Recognize that in subtraction, hundreds are subtracted from hundreds, tens are subtracted from tens, and ones are subtracted from ones.

• Explore subtraction as a process of taking away or adding up. Language Objectives

• Write two numbers in a place-value chart to find their difference.

• Write two numbers in expanded notation to find their difference.

• Record the steps for adding up to subtract on an open number line.

• Compare two approaches to subtraction to describe how they are alike and different.

Core Lesson Key Terminology & Definitions: There is no new vocabulary.

Review the following key terms.

• difference the result of subtraction.

• regroup to put together or break apart ones, tens, or hundreds. For example, 10 ones can be regrouped as 1 ten, or 1 hundred can be regrouped as 10 tens

STANDARDS

NATIONAL: US Common Core State Standards (2010)

MA.2.NBT.B.7 (Advanced)	Add and subtract within 1000. Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the

relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.

Topic: Lesson 18: Use Addition and Subtraction Strategies with Three Digit Numbers

Core Lesson Description: In Grade 2 students begin working with three-digit numbers. They use break-apart strategies, count by tens and hundreds, and apply place-value concepts to find sums and differences within 1,000. In this lesson students continue to explore addition and subtraction using three-digit numbers. They use place value understanding to subtract from three-digit numbers with zeroes. They use and explain strategies for solving three-digit addition and subtraction problems and use addition to check the solution to a subtraction problem.

Core Lesson Student Learning Objectives:

Content Objectives

• Fluently break apart three-digit numbers as a strategy for addition and subtraction.

• Fluently determine when regrouping ones or tens is necessary and carry out the regrouping to find a sum.

• Fluently determine when decomposing tens or hundreds is necessary and carry out the decomposition to find a difference.

• Subtract from three-digit numbers with zeros in the ones and/or tens places. • Use addition to check the solution to a subtraction problem.

Language Objectives

• Record sums and differences found by using models.

• Draw an open number line to model adding and subtracting three-digit numbers.

• Write addition and subtraction equations to represent word problems.

• Explain how to solve addition and subtraction problems with three-digit numbers.

• Explain why and how addition and subtraction strategies work

Core Lesson Key Terminology & Definitions:

There is no new vocabulary.

Review the following key terms:

• difference the result of subtraction.

• regroup to put together or break apart ones, tens, or hundreds. For example, 10 ones can be regrouped as 1 ten, or 1 hundred can be regrouped as 10 tens.

• sum the result of addition.

STANDARDS

NATIONAL: US Common Core State Standards (2010)

MA.2.NBT.B.7 (Advanced)	Add and subtract within 1000. Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.
MA.2.NBT.B.9 (Advanced)	Explain why addition and subtraction strategies work, using place value and the properties of operations. Explanations may be supported by drawings or objects.

Topic: Lesson 19: Add Several Two Digit Numbers

Core Lesson Description: In this lesson students add three or more two-digit numbers with and without regrouping ones and/or tens. Students interpret number models and explore strategies including breaking apart

numbers and making tens and hundreds.

Core Lesson Student Learning Objectives:

- Break apart three or more numbers as a place-value strategy for adding.
- Develop strategies for adding more than two numbers.
- Apply the commutative and associative properties of addition.

Core Lesson Key Terminology & Definitions:

There is no new vocabulary.

Review the following key terms.

- ones single units or objects.
- tens groups of 10 ones.

STANDARDS

NATIONAL: US Common Core State Standards (2010)

MA.2.NBT.B.9 (Advanced)	Explain why addition and subtraction strategies work, using place value and the properties of operations. Explanations may be supported by drawings or objects.

Unit: Unit 4: Length: Measurement, Addition and Subtraction, and Line Plots

Timeline: Week 12

Unit Description: This unit extends students' understanding of measuring length. Students preview the skills they will be learning in this unit and assess what they know and do not know about them. Students record their progress after completing each lesson and reflect on their learning at the end of the unit.

Unit Big Ideas:

-There are different tools and different units that can be used to measure length. Knowing about measurement will help you estimate and compare lengths.

- You can use addition or subtraction to find the difference between the lengths of objects.

STANDARDS:

STANDARDS

NATIONAL: US Common Core State Standards (2010)

MA.2.MD.A.1 (Advanced)	Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.	
MA.2.MD.A.2 (Advanced)	Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.	
MA.2.MD.A.3 (Advanced)	Estimate lengths using units of inches, feet, centimeters, and meters.	
MA.2.MD.A.4 (Advanced)	Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.	
MA.2.MD.B.5 (Advanced)	Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.	
MA.2.MD.B.6 (Advanced)	Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2,..., and represent whole-number sums and differences within 100 on a number line diagram.	
MA.2.MD.D.9 (Advanced)	Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.	

 (* standards consolidated from Topic level)

Topic: Lesson 20: Measure in Inches and Centimeters

Core Lesson Description: In this lesson students use rulers and tiles to measure the lengths of objects in inches or centimeters.

Core Lesson Student Learning Objectives:

Content Objectives

• Understand that the lengths of objects can be measured by using different standard units.

• Represent and measure the lengths of object using different tools, such as inch and centimeter rulers.

• Compare measuring the length of an object in inches with measuring the length of an object in centimeters.

Core Lesson Key Terminology & Definitions:

Lesson Vocabulary

• centimeter (cm) a unit of length. There are 100 centimeters in 1 meter. Your little finger is about 1 centimeter across.

• inch (in.) a unit of length. There are 12 inches in one foot. A quarter is about 1 inch across.

• length measurement that tells the distance from one point to another, or how long something is.

• measure to find length, height, or weight by comparing it to a known unit.

• ruler a measuring stick that is marked in inches and centimeters. It shows 12 inches and 30 centimeters. Review the following key term.

• unit a part that is used to measure. Each part for one kind of unit has the same length.

STANDARDS

NATIONAL: US Common Core State Standards (2010)

MA.2.MD.A.1 (Advanced)	Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.
MA.2.MD.A.2 (Advanced)	Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.
MA.2.MD.B.5 (Advanced)	Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.
MA.2.MD.D.9 (Advanced)	Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.

Topic: Lesson 21: Measure in Feet and Meters

Core Lesson Description: In this lesson students learn about measuring with different tools, such as rulers, yardsticks, meter sticks, and measuring tapes. They learn how to choose the most appropriate tool for measuring the length of a given object. Students measure objects longer than a ruler by using the ruler repeatedly.

Core Lesson Student Learning Objectives:

• Choose a tool for measuring the length of a given object.

• Measure lengths by using rulers, yardsticks, meter sticks, and measuring tapes.

• Use a ruler repeatedly to measure a length.

Core Lesson Key Terminology & Definitions:

•foot (ft)- a unit of length. There are 12 inches in 1 foot.

• measuring tape- a flexible measuring strip that shows inches and centimeters.

• meter (m)- a unit of length. There are 100 centimeters in 1 meter.

• meter stick- a measuring stick that is 1 meter long and shows 100 centimeters.

• yard (yd)- a unit of length. There are 3 feet, or 36 inches, in 1 yard.

• yardstick- a measuring stick that is 1 yard long and shows 36 inches. Review the following key terms.

• centimeter (cm)- a unit of length. There are 100 centimeters in 1 meter. Your little finger is about 1 centimeter across.

• inch (in.)- a unit of length. There are 12 inches in 1 foot. A quarter is about 1 inch across.

• ruler- a measuring stick that is marked in inches and centimeters. It shows 12 inches and 30 centimeters.

STANDARDS

NATIONAL: US Common Core State Standards (2010)

MA.2.MD.A.1 (Advanced)	Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.
MA.2.MD.A.2 (Advanced)	Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.
MA.2.MD.B.5 (Advanced)	Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.
MA.2.MD.D.9 (Advanced)	Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.

Topic: Lesson 22: Understand Measurement with Different Units

Core Lesson Description: In this lesson students compare measurements made in inches and feet, inches and centimeters, and other units. For example, students measure an object in both feet and inches and then learn that more inches are needed to measure the object than feet.

Core Lesson Student Learning Objectives:

Content Objectives

• Compare lengths measured in different units.

• Understand the relationship between feet and inches and between feet and yards.

• Understand the relationship between centimeters and inches and between centimeters and meters.

• Explore how the number of units in a measurement is related to the size of the units used.

Core Lesson Key Terminology & Definitions:

Lesson Vocabulary There is no new vocabulary. Review the following key terms.

• centimeter (cm) a unit of length. There are 100 centimeters in 1 meter. Your little finger is about 1 centimeter across.

• foot (ft) a unit of length. There are 12 inches in 1 foot.

• inch (in.) a unit of length. There are 12 inches in 1 foot. A quarter is about 1 inch across.

• meter (m) a unit of length. There are 100 centimeters in 1 meter.

• yard (yd) a unit of length. There are 3 feet, or 36 inches, in 1 yard.

Topic: Lesson 23: Estimate and Measure Length

Core Lesson Description: In this lesson students estimate the lengths of objects using the standard units of inches, feet, centimeters, and meters. They compare their estimates to actual measurements to determine if their estimates are reasonable. They learn that being able to estimate lengths is good practice for estimating the solutions to many types of math problems.

Core Lesson Student Learning Objectives:

Content Objectives

• Estimate length in inches, centimeters, feet, and meters.

• Use benchmark objects when estimating.

Core Lesson Key Terminology & Definitions:

Lesson Vocabulary

• estimate (noun) a close guess made using mathematical thinking.

• estimate (verb) to make a close guess based on mathematical thinking.

STANDARDS

NATIONAL: US Common Core State Standards (2010)

MA.2.MD.A.1 (Advanced)	Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.
MA.2.MD.A.3 (Advanced)	Estimate lengths using units of inches, feet, centimeters, and meters.

Topic: Lesson 24: Compare Lengths

Core Lesson Description:

In this lesson students compare lengths of objects within a specific unit and use addition and subtraction to find differences in length.

Core Lesson Student Learning Objectives:

• Compare the length of objects by determining which measure is greater than or less than the other.

• Use addition and subtraction to compare lengths, finding how much greater or less the measure of one object is than the other.

Core Lesson Key Terminology & Definitions:

There is no new vocabulary. Review the following key terms.

• difference- the result of subtraction.

• length- measurement that tells the distance from one point to another, or how long something is.

• longer- having a length that is greater than that of another object. • shorter having a length or height that is less than that of another object.

STANDARDS

NATIONAL: US Common Core State Standards (2010)

MA.2.MD.A.4 (Advanced)	Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.

Topic: Lesson 25: Add and Subtract Lengths

Core Lesson Description:

In this lesson students apply what they have learned about measuring to solve problems involving length. They use models to represent problems and then devise strategies to organize the information that leads to a solution.

Core Lesson Student Learning Objectives:

Content Objectives

• Use addition and subtraction to solve problems involving lengths.

• Recognize the importance of working within a single unit when adding or subtracting lengths.

• Interpret and apply models that represent measurement problems involving addition and subtraction.

Core Lesson Key Terminology & Definitions: Lesson Vocabulary There is no new vocabulary.

Review the following key term.

• open number line a straight line with only the numbers important to a problem labeled.

STANDARDS

NATIONAL: US Common Core State Standards (2010)

MA.2.MD.A.1 (Advanced)	Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.
MA.2.MD.A.2 (Advanced)	Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.
MA.2.MD.B.5 (Advanced)	Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.
MA.2.MD.D.9 (Advanced)	Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.

Topic: Lesson 26: Add and Subtract on the Number Line

Core Lesson Description: In this lesson students learn to represent whole numbers as lengths on the number line. They apply what they have learned about solving addition and subtraction problems to represent and solve problems on the number line.

Core Lesson Student Learning Objectives: Content Objectives

• Represent a whole number as a length from 0 on a number line.

• Use a number line to represent and solve addition problems.

• Use a number line to represent and solve subtraction problems.

• Use a number line to solve addition and subtraction word problems.

Core Lesson Key Terminology & Definitions: Lesson Vocabulary

• number line a straight line marked at equal spaces to show numbers. Review the following key terms.

• difference the result of subtraction.

• length measurement that tells the distance from one point to another, or how long something is. • longer having a length that is greater than that of another object.

• shorter having a length or height that is less than that of another object.

• taller having a height that is greater than that of another object.

STANDARDS

NATIONAL: US Common Core State Standards (2010)

MA.2.MD.B.6 (Advanced)	Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2,..., and represent whole-number sums and differences within 100 on a number line diagram.

Topic: Lesson 27: Read and Make Line Plots

Core Lesson Description: In this lesson students organize lengths on a line plot. They read charts, interpret the data, and represent the data. They recognize that a number line can be used as a tool for organizing information.

Core Lesson Student Learning Objectives:

- Interpret marks on a line plot as data.
- Understand that the numbers on a ruler or number line can be used to represent a given length.
- Represent data on a line plot.

Core Lesson Key Terminology & Definitions:

- line plot a data display that shows data as marks above a number line.

Review the following key term.

- data a set of collected information.

STANDARDS

NATIONAL: US Common Core State Standards (2010)

MA.2.MD.A.1 (Advanced)	Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.
MA.2.MD.A.2 (Advanced)	Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.
MA.2.MD.B.5 (Advanced)	Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.
MA.2.MD.D.9 (Advanced)	Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.

Unit: Unit 5: Shapes and Arrays

Timeline: 6 Weeks

Unit Description: Shapes and Arrays

Unit Big Ideas:

The major themes of this unit are:

• Knowing the number of sides and angles a shape has can help you identify the shape.

• You can use what you know about dividing a shape into equal parts to show halves, thirds, and fourths. • An array is an arrangement of objects in equal rows and columns. You can use what you know about addition and skip-counting to find the number of objects in an array

STANDARDS:

STANDARDS

NATIONAL: US Common Core State Standards (2010)

MA.2.OA.C.3 (Advanced)	Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.	
MA.2.OA.C.4 (Advanced)	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.	
MA.2.G.A.2 (Advanced)	Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.	
MA.2.G.A.3 (Advanced)	Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words halves, thirds, half of, a third of, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.	

 (* standards consolidated from Topic level)

Topic: Lesson 28: Recognize and Draw Shapes

Core Lesson Description: In this lesson students use the number of sides and angles to identify, name, and classify polygons. Students reason logically when they generalize attributes to sets of shapes and in determining when an attribute can be applied to all of one kind of polygon, some of them, or none of them.

Core Lesson Student Learning Objectives:

• Identify triangles, quadrilaterals, pentagons, and hexagons based on the number of sides and angles they have.

• Identify cubes based on the number and shape of faces that are the same.

• Distinguish among triangles, quadrilaterals, pentagons, and hexagons based on their attributes.

• Draw a shape based on specific attributes.

Core Lesson Key Terminology & Definitions:

• angle- one of the corners of a shape where two sides meet.

• cube- a three-dimensional shape with 6 square faces and all edges of equal length.

• edge- a line segment where two faces meet in a three-dimensional shape.

• hexagon- a two-dimensional closed shape with 6 straight sides and 6 angles.

• pentagon- a two-dimensional closed shape with exactly 5 sides and 5 angles.

• quadrilateral- a two-dimensional closed shape with exactly 4 sides and 4 angles.

• rectangle- a quadrilateral with four square corners. Opposite sides of a rectangle have the same length.

• rhombus- a quadrilateral with all sides the same length.

• side- a line segment that forms part of a two-dimensional shape.

• square- a quadrilateral with 4 square corners and 4 sides of equal length.

• triangle- a two-dimensional closed shape with exactly 3 sides and 3 angles.

• vertex- the point where two rays, lines, or line segments meet to form an angle. Review the following key terms.

• face- a flat surface of a solid shape.

STANDARDS

NATIONAL: US Common Core State Standards (2010)

MA.2.G.A.2 (Advanced) Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.

Topic: Lesson 29: Recognize and Draw Shapes

Core Lesson Description: In this lesson students use the number of sides and angles to identify, name, and classify polygons. Students reason logically when they generalize attributes to sets of shapes and in determining when an attribute can be applied to all of one kind of polygon, some of them, or none of them.

Core Lesson Student Learning Objectives:

Content Objectives

• Identify triangles, quadrilaterals, pentagons, and hexagons based on the number of sides and angles they have.

• Identify cubes based on the number and shape of faces that are the same.

• Distinguish among triangles, quadrilaterals, pentagons, and hexagons based on their attributes.

• Draw a shape based on specific attributes.

Core Lesson Key Terminology & Definitions:

Lesson Vocabulary

• angle one of the corners of a shape where two sides meet.

• cube a three-dimensional shape with 6 square faces and all edges of equal length.

• edge a line segment where two faces meet in a three-dimensional shape.

• hexagon a two-dimensional closed shape with 6 straight sides and 6 angles.

• pentagon a two-dimensional closed shape with exactly 5 sides and 5 angles. • quadrilateral a two-dimensional closed shape with exactly 4 sides and 4 angles.

• rectangle a quadrilateral with four square corners. Opposite sides of a rectangle have the same length.

• rhombus a quadrilateral with all sides the same length.

• side a line segment that forms part of a two-dimensional shape.

• square a quadrilateral with 4 square corners and 4 sides of equal length.

• triangle a two-dimensional closed shape with exactly 3 sides and 3 angles.

• vertex the point where two rays, lines, or line segments meet to form an angle. Review the following key terms.

• face a flat surface of a solid shape.

STANDARDS

NATIONAL: US Common Core State Standards (2010)

MA.2.G.A.3 (Advanced) Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words halves, thirds, half of, a third of, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.

Topic: Lesson 30: Partition Rectangles

Core Lesson Description: In this lesson students build on the concept of an array and the attributes of a rectangle as they fill a rectangular shape using congruent squares.

Core Lesson Student Learning Objectives:

• Analyze an array of squares with no gaps or overlaps.

• Determine the number of squares used to partition a rectangle.

• Create an array of squares to fit a rectangular shape.

Core Lesson Key Terminology & Definitions:

• column- a top-to-bottom (vertical) line of objects or numbers, such as in an array or table.

• row- a side-by-side (horizontal) line of objects or numbers, such as in an array or table.

STANDARDS

NATIONAL: US Common Core State Standards (2010)

MA.2.G.A.2 (Advanced) Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.

Topic: Lesson 31: Add Using Arrays

Core Lesson Description: In this lesson students apply their knowledge of addition, skip-counting, and partitioning rectangles to arrays. They analyze arrays, recognizing them as sets of objects organized in equal rows and columns. They recognize that adding 3 groups of 4 or adding 4 groups of 3 results in the same sum. This structure lays the foundation for the extension of the commutative property to multiplication.

Core Lesson Student

Content Objectives • Describe an array of up to 5 rows and 5 columns. • Calculate the number of items in an array using repeated addition and skip-counting. • Write an equation to express

Learning Objectives: the sum of items in an array.

Core Lesson Key Terminology & Definitions: Lesson Vocabulary

• array a set of objects arranged in equal rows and equal columns. Review the following key terms.

• column a top-to-bottom (vertical) line of objects or numbers, such as in an array or table.

• row a side-by-side (horizontal) line of objects or numbers, such as in an array or table.

STANDARDS

NATIONAL: US Common Core State Standards (2010)

MA.2.OA.C.4 (Advanced) 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.

Topic: Lesson 32: Even and Odd Numbers

Core Lesson Description: In this lesson students learn that even numbers can be seen as groups of 2 with no leftovers or as 2 equal groups of any number. They connect skip-counting by twos to the concept of even numbers. Students relate the concept of 2 equal groups to doubles facts, examine doubles 1 1 facts, and relate both to the structure of even and odd numbers. They examine odd and even numbers in a 1–20 chart and study patterns in number charts and with ones digits.

Core Lesson Student Learning Objectives:

• Identify odd and even numbers.

• Relate doubles and doubles 1 1 facts to odd and even numbers.

• Use counting on by twos to identify even numbers.

Core Lesson Key Terminology & Definitions:

• even number- a whole number that always has 0, 2, 4, 6, or 8 in the ones place. An even number of objects can be put into pairs or into two equal groups without any leftovers.

• odd number- a whole number that always has 1, 3, 5, 7, or 9 in the ones place. An odd number of objects cannot be put into pairs or into two equal groups without a leftover.

STANDARDS

NATIONAL: US Common Core State Standards (2010)

MA.2.OA.C.3 (Advanced) Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.