Grade Level	Content Area	Course Title *(For 9-12 Samples Only)*	Unit Title
Grade 2	Mathematics		Addition and Subtraction Story Investigations

Length of Unit	Time of Year Taught	Expected Prior Knowledge
5 Days	1st quarter of second semester	Be able to represent a math word problem situation using words, numbers, pictures, manipulatives, and symbols. Be able to write number sentences given a math word story. Be familiar with addition and subtraction problem strategies: counting on; counting back; and subtracting by counting up. Be familiar with fact families. Be able to add and subtract with one- and two-digit numbers without regrouping (both addends 20 or less, and both minuend and subtrahend 20 or less). Be familiar with representing groups of 10's and 1's using manipulatives. Be able to count to one hundred and understand the concept of place value: ones, tens, and hundreds.

Unit Description

In Grade 2, contextual problems are usually word problems that help develop and apply the concepts and skills taught in all the grade 2 mathematical strands. Students are familiar, recognize, and use the symbols of +, -, x, and = to record number sentences. In this unit, the students will use a variety of representations including numbers, pictures, objects, and words to model addition and subtraction problem solutions. Students will become familiar with representing an unknown number with a symbol – the question mark (?). After completion of the unit, sstudents should show progress toward mastery of the following skills:

- Identify the given information that can be used to find a solution.
- Select from a variety of problem-solving strategies and use one or more strategies to arrive at a solution for both one-step and two-step addition and subtraction word problems.
- Model addition by counting on and adding items together.
- Model subtraction by taking away and/or determining how many are missing.
- Demonstrate addition and subtraction one-step and two-step word problems using many different models including manipulatives, pictures, diagrams, words, and numbers.
- Write math addition and subtraction sentences using a "?" symbol as the unknown quantity in math word story.
- Demonstrate addition and subtraction with one- and two-digit numbers without regrouping (addends adding to 99 or less, and both minuend and subtrahend 99 or less).

Standards: Common Core **Domain:** Operations and Algebraic Thinking **Standard #1** **Cluster:** Represent and solve problems involving addition and subtraction. **Standard #1:**	**Domain:** Operations and Algebraic Thinking **Standard #1** **Cluster:** Represent and solve problems involving addition and subtraction. **Standard #1:** 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.

Summative Assessment	Students will be assessed based on written answers in a test. Summative Assessment attached. Students will demonstrate their ability to: • Join two or three groups together to find how many in all. • Separate two or three groups to find how many are remaining. • Solve a story problem by writing an addition sentence. • Solve a story problem by writing a subtraction sentence. • Demonstrate computing and writing addition and subtraction problems with one- and two-digit numbers without regrouping • 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.
Scoring for Summative Assessment	A total of 20 points are available in the assessment. Eighty percent (80%) or above represents unit mastery (16 out of 20 points or better). Answer key attached.
Materials/Resources Needed	***Napping House*** by Audrey Wood; felt board; felt pieces – grandma, boy, dog, cat, mouse, and flea; ***Saxon Math 2*** textbook, Lesson 8 and Lesson 11; unifix cubes – 100 for each student; *1-Step and 2-Step Addition Word Problem* worksheet; *1-Step and 2-Step Subtraction Word Problem* worksheet; *Hundreds Chart Design* patterns sheet; *Hundreds Chart Design* instruction sheet; laminated Hundreds Chart – one for each student and the teacher, dry-erase markers – yellow, brown, black, blue, green, and red – one of each for each student and the teacher; tissues; in-class computer with Internet capability; computer projector; pull-down screen; computers for students – one for each student or minimum one for each pair of students – with Internet capability; 1-Step and 2-Step Addition and Subtraction Word Problem Summative Assessment.

This table is consistent with the methods of instruction and assessment described in the narrative.

	Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5

Instruction and Timeline	Obtain from the Phoenix public library, ***Napping House*** by Audrey Wood. Read the through the story once showing pictures from the book. Tell the story again, but using felt board and pre-made felt pieces for each napping creature (grandma, boy, dog, cat, mouse, flea). Place the creature on the felt board as the creature is described. From time to time, stop the story and ask the children to count the number of creatures napping. Then ask the children how many feet are on the bed (note: fleas have 6 legs – feet). Write number sentences for each. Where the answer belongs, place a "?." Next write the completed number sentence below filling in the answer for number of feet that the children solicit. For example, after the bed crawls on the bed, there are 2 + 2 = ? Then, below this write 2 + 2 = 4 when the children have given the answer. Tell the children that the question mark is a symbol for the unknown answer that we are trying to find. Guided Practice: During	Guided Practice: Say "Today we are going to work an addition math problem together. We will work through the problem step-by-step. I will work it out with you on the board, while you work it out on your paper. Can anyone tell me what "how many are there all together" means? (*It means to add.)* Listen for these words as I write, say, and review the problem: 'There were 21 bunnies, 15 cats, and some dogs at the Pet Shelter. There were 58 bunnies, cats and dogs all together. How many dogs were there?' Say: "What are the important words in this story that will help us solve the problem?" (Wait for responses and then proceed.) Underline these words: 21 bunnies, 15 cats, 58 all together, how many dogs. Ask: "How many bunnies and cats were there? Write a number sentence on your paper that will provide us with this answer. Be sure to use a '?' for the answer we are looking for. Circulate to guide students as necessary. Write the number sentence: 21 + 15 = ? Solicit answers (36) and write: 21 + 15 = 36. Say: "What do we need to do next? (Wait for student responses) From the total, we need to determine how of the animals were dogs. Write the number sentence to determine this. Be sure to use a '?' for the answer we are looking for. Remember, we just figured 36 of the animals were bunnies and cats. Circulate to guide students as necessary. Write: 36 + ? = 58 on the	Guided Practice: Say "Today we are going to work a subtraction math problem together. We will work through the problem step-by-step. I will work it out with you on the board, while you work it out on your paper. Can anyone tell me what "how many is left" means? (*It means to subtract.)* Listen for these words as I write, say, and review the problem: 'Bethany had 48 beads. Her sister Anna wanted 18 beads to make a bracelet and her sister Jenna wanted 10 beads to make a ring. After Bethany shared with her sisters, how many beads does Bethany have left?' Say: "What are the important words in this story that will help us solve the problem?" (Wait for responses and then proceed.) Underline these words: Bethany, 48 beads, Anna, 18 beads, Jenna, 10 beads, have left. Ask: "How many beads did Bethany give away? Write a number sentence on your paper that will provide us with this answer. Be sure to use a '?' for the answer we are looking for. Circulate to guide students as necessary. Say: "Bethany gave away 18 bead to one sister and 10 beads to another sister. She gave away how many beads all together? Write the number sentence: 18 + 10 = ? Solicit answers (28) and write: 18 + 10 = 28. Say: "What do we need to do next? (Wait for student responses) We need to determine how many beads Bethany had left. Write the number sentence to determine this. Be sure to use a '?' for the answer we	Independent Practice: Using the instructions "*Hundreds Chart Designs*" and patterns for "*Hundreds Chart Designs*," practice addition and subtraction word problems using a hundreds chart. Give each student one laminated hundreds chart grid, six dry-ease markers (brown, yellow, green, red, blue and black), and tissues. Select a "picture" from the "*Hundreds Chart Designs*" and begin prompting students to shade in a particular cell on the grid. For example, for addition 1-step and 2-step word problems say, "I put 5 cherry tomatoes, 7 baby carrots, and 10 cucumber slices in my salad. How many vegetable pieces did I have in my salad all together? (Solicit number sentences from the students and write on the board. Use a '?' for the unknown variable.) Please shade in the cell that represents this answer with the brown marker." Or for subtraction 1-step and	Practice addition and subtraction word problems using computer math games. Using the in-class computer and projector, go to website: ***Math Playground*** http://www.mathplayground.com/wpdatabase/wpindex.html Click on Single Step and Two Steps for Addition and Subtraction – Facts to 20. And Click on Single Step – No Regrouping and Two steps – No Regrouping Addition and Subtraction – 2 and 3 Digit Numbers. Model how to use the programs. Arrange for students to have their own computer (or two students for every one computer) such

	circle time introduce simple addition and subtraction oral word problems. Say, "Jill has 17 coloring pencils; Henry has 10 coloring pencils. Who has more pencils? (*Wait for response - Jill*) How many more coloring pencils does she have?" (*Wait for response - 7*). Another example: "I have 25 skittles and my brother has 10 skittles. How many skittles do we have all together?" (35) Repeat with two more simple oral addition and subtraction word problems. Guided Practice: Using ***Saxon Math 2*** Lesson 8 and Lesson 11, act out with the students simple 1-step addition and subtraction word problems (stories). Focus on key vocabulary for recognizing addition problems (some, some more, all together) and key vocabulary for recognizing subtraction problems (some, some went away, are left, are remaining).	board. Solicit answers from the students. Then write 36 + 22 = 58. Next, ask the students to draw a picture of the story on their paper and see if they get the same answer. Tell the students that the problem could have been solved another way. Give the students unifix cubes to represent the beads. Retell the addition story using the cubes. Say: "There were 21 bunnies." Connect 21 cubes by making 2 groups of 10 and 1 group of 1. Have the children make the same cube towers. Then say: "15 cats." Connect 15 cubes by making 1 tower of 10 and 1 tower of 5. Have the children make the same cube towers. Next add the towers to give 3 towers of 10 and 1 tower of 6. Instruct the children to do the same. Then say: "and some dogs at the Pet Shelter. There were 58 bunnies, cats and dogs all together. How many dogs were there?" Using the cubes, count up to 58 by making 5 towers of 10 and 1 tower of 8. Students should could 22. Independent Practice: With unifix cubes as an aid, have the children complete the *1-Step and 2-Step Addition Word Problem* worksheet in which the student will solve one- and two-step word problems involving situations of adding to, and putting together by writing equations with a symbol for the unknown number to represent the problem.	are looking for. Remember, we just figured that Bethany gave 28 beads away. Circulate to guide students as necessary. Write: 48 – 28 = ? on the board. Solicit answers from the students. Then write 48 – 28 = 20. Next, ask the students to draw a picture of the story on their paper and see if they get the same answer. Tell the students that the problem could have been solved another way. Give the students unifix cubes to represent the beads. Retell the subtraction story using the cubes. Say: "Bethany had 48 beads." Connect 48 cubes by making 4 groups of 10 and 1 group of 8. Have the children make the same cube towers. Then say: "Her sister Anna wanted 18 beads to make a bracelet" Using the cubes, take away 18 cubes and direct the students to take away 18 cubes. Say: "and her sister Jenna wanted 10 beads to make a ring." Using the cubes, take away 10 cubes and direct the students to take away 10 cubes. Say: "After Bethany shared with her sisters, how many beads does Bethany have left?" With the students count the remaining cubes (20). Independent Practice: With unifix cubes as an aid, have the children complete the *1-Step and 2-Step Subtraction Word Problem* worksheet in which the student will solve one- and two-step word problems involving situations of adding to, and putting together by writing equations with a symbol for	2-step word problems say, "I had 57 pennies in my pocket. I gave 12 pennies to my brother. Then I lost some pennies. Now I have 11 pennies, how many did I lose? (Solicit number sentences from the students and write on the board. Use a '?' for the unknown variable.) Please shade in the cell that represents this answer with the blue marker. Students may use paper and unifix cubes to aid in solving the 1-step and 2-step addition and subtraction problems. Continue giving word problems to fill in numbers on the grid, which will eventually make a picture. For example, the numbers 13, 14, 17, 18, 22, 29, 32, 39 (brown eye brow) 24, 27, 33, 34, 37, 38 (blue eyes) 62, 68, 73, 77, 84, 85, 86 (red mouth) will make a smiley face! After completing the picture, have students wipe their board to make a new picture.	that each student (or pairs of students) can play on their own game. Have the students complete the summative assessment in which the students complete 1- and 2-step addition and subtraction word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions Students will be required to write the math equation with a "?" representing the unknown quantity. The summative assessment with answers and rubric is attached. 80% or better on the summative assessment

			the unknown number to represent the problem.		represents mastery.
Student Activities and Timeline	Students will respond orally to teacher prompted questions while listening to the story, ***Napping House***. Students will participate in oral word problems and providing answers to teacher questions. Students will participate in acting out 1-step addition and 1-step subtraction problems using ***Saxon Math 2***, Lesson 8 and Lesson 11.	Students will respond orally to teacher prompted questions while listening to the lesson on addition math word problems. Students will write on their paper the addition math sentences identified in the lesson. Students will use the ? symbol to represent an unknown quantity in their addition sentences. Students will the draw the addition problem on their paper. Students will demonstrate the addition word problem and its solution using unifix cubes. Students will complete the *1-step and 2-step Addition Word Problem* worksheet.	Students will respond orally to teacher prompted questions while listening to the lesson on subtraction math word problems. Students will write on their paper the subtraction math sentences identified in the lesson. Students will use the ? symbol to represent an unknown quantity in their subtraction sentences. Students will the draw the subtraction problem on their paper. Students will demonstrate the subtraction word problem and its solution using unifix cubes. Students will complete the *1-step and 2-step Subtraction Word Problem* worksheet.	Student will practice 1-step and 2-step word problems using paper, unifix cubes, hundreds chart grid, and markers. Children will color in the appropriate number solution on the hundreds chart using the dry-erase markers to make a picture.	Students will practice addition and subtraction 1-step and 2-step addition and subtraction word problems (without regrouping). Students will play progressively more difficult games after mastering easy problems. Students will complete the Addition and Subtraction Word Problem Summative Assessment. 80% or better on the summative assessment represents mastery.

2nd Grade Math Summative Assessment

Materials: paper, pencil, unifix cubes
Instructions: Students are to write a number sentence using the information in the given 1-step and 2-step addition and subtraction word problems. Students are expected to use a symbol to represent the unknown quantity in their number sentence and then solve for that unknown quantity. There are 10 questions. Each question is worth 2 points for a total of 20 points.

1. Tom has 27 marbles. Ben has 12 more marbles than Tom. How many marbles does Ben have?

2. I gave 10 pencils to my sister. Now I have 25 pencils. How many pencils did I have to begin with?

3. Tom and Sam have 42 toy cars. Thirty of the cars belong to Tom and the rest belong to Sam. How many of the toy cars belong to Sam?

4. Jason has 39 dollars. Tom has 8 fewer dollars than Jason. How many dollars does Tom have?

5. On Monday morning dad picked some apples from the tree. In the afternoon he picked 40 more apples and then he had 76 apples in all. How many apples did dad pick in the morning?

6. There were 46 balls on the playground. Twenty were soccer balls and 15 were basketballs. The rest were tennis balls. How many were tennis balls?

7. Some children lined up to jump rope. Nine left to go play hopscotch. Four children left to get a drink of water. There were now 17 children in the jump rope line? How many were there to begin with?

8. Dad caught 28 fish in the morning. He threw 10 back because they were too small. He cooked up 5 and ate them for lunch. How many fish did dad have to take home?

9. At the park I saw 39 animals. I saw 12 dogs, 15 squirrels, and some frogs. How many frogs did I see?

10. I read 25 pages of my book yesterday and 41 pages today. I need to read 12 more pages to finish my book. How many pages are in my book?

2nd Grade Math Summative Assessment Answer Key
(Accept reasonable math sentences that lead to the correct final answer)

1. 27 + 12 = ?
   Ans. = 39

2. ? – 10 = 25
   Ans. = 35

3. 30 + ? = 42
   Ans. = 12

4. 39 – 8 = ?
   Ans. = 31

5. ? + 40 = 76
   Ans. = 36

6. 20 + 15 = ?
   Ans. = 35
   46 – 35 = ?
   Final Ans. = 11

   or

   46 – 20 = ?
   Ans. = 26
   26 – 15 = ?
   Final Ans. = 11

7. 9 + 4 = ?
   Ans. = 13
   ? – 13 = 17
   Final Ans. = 30

8. 10 + 5 = ?
   Ans. = 15
   28 – 15 = ?
   Final Ans. = 13

   or

   28 – 10 = ?
   Ans. = 18
   18 – 5 = ?
   Final Ans. = 13

9. 12 + 15 = ?
   Ans. = 27
   27 + ? = 39
   Final Ans. = 12

10. 25 + 41 = ?
    Ans. = 66
    66 + 12 = ?
    Final Ans. = 78

Grading for 2nd Grade Math: The summative assessment has a total of 20 points. Mastery is 80% and above (16 points or greater)

Grade	Number of Answers correct
A	18 - 20
B	16 - 17
C	14 - 15
D	12 - 13
F	11 and below