

## Lesson Plan for 1<sup>st</sup> Grade Addition of a two digit number to a one digit number

For the lesson on March 19, 2014

At Pine Trail Elementary, Mrs. Hajdin's Class

**Instructor:** Mrs. Stephanie Hajdin

**Lesson Plan developed by:** Lisa Gilbert, Stephanie Hajdin, Diane LeJeune, Tracey Mitchell, Lydia Wachtel

**Topic:** Addition of a two digit number to a one digit number using regrouping.

### **Overarching Goal: Things we want for our students**

- verbally and freely express mathematical thinking
- find joy in the challenge of mathematics

### **Goals of Instruction:**

A. Lesson goal for students:

- I. Students will add a two digit number and a one digit number utilizing the "make a ten" strategy.

### **Math Practice Goal for Lesson:**

MP #8- Look for and express regularity in repeated reasoning (Make a ten strategy)

MP#3- Construct viable arguments and critique the reasoning of others.

### **Benchmark:**

Lesson will focus on CCSS 1.NBT.4

Use place value understanding to add and subtract.

"Add within 100, including adding a 2-digit number and a 1-digit number and a multiple of ten, 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 and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; **and sometimes it is necessary to compose a ten.**"

## **Background Information:**

Pine Trail Elementary services approximately 700 students in grades K- 5. This lesson is being taught in Stephanie Hajdin's first grade class. This class has 15 students of varying abilities. This class consists of eight boys and seven girls ranging in age from 6-8. The math levels in this class vary from students with solid math understanding to progressing. Currently, there are 4 students who are emerging in their level of understanding .

**Developmental Path:** The Developmental Path in CCSS:

### **Kindergarten**

#### **K.NBT Work with numbers 11-19 to gain foundation for place value.**

1. Compose and decompose numbers from 11-19 into ten ones and some further ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.

This relates also to **Operations and Algebraic Thinking** standards.

**K.OA.3** Decompose numbers less than or equal to 10 into pairs in more than one way e.g., by using objects or drawings and record each decomposition by a drawing or equation (e.g.,  $5 = 2 + 3$  and  $5 = 4 + 1$ )

**K.OA.4** For any number from 1-9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation.

### **First Grade**

In Summary for first grade

1. They use properties of addition to add whole numbers and to create and use increasingly sophisticated strategies based on these properties (e.g., "making tens") to solve addition and subtraction problems within 20.

2. Students develop, discuss, and use efficient, accurate, and generalizable methods to add within 100 and subtract multiples of 10

#### **1.NBT.4 Use place value understanding to add and subtract.**

Add within 100, including adding a 2-digit number and a 1-digit number and a multiple of ten, 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 and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones, **and sometimes it is necessary to compose a ten.**

## **Second Grade**

In Summary introduction, (2) “They solve problems within 1000 by applying their understanding of models for addition and subtraction, and they develop, discuss, and use efficient, accurate, and generalizable methods to compute sums and differences of whole numbers in base-ten notation, using their understanding of place value and the properties of operations.

### **Use place value understanding and properties of operations to add and subtract.**

**2.NBT.5** Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

**2.NBT.7** 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.*

## **Third Grade**

### **Use place value understanding and properties of operations to perform multi-digit arithmetic.**

**3.NBT.2** 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.

## **Fourth Grade**

**4.NBT.4** Fluently add and subtract multi-digit whole numbers using the standard algorithm.

## **Fifth Grade**

**5.NBT.1** Recognize that a multi-digit number in one place represents 10 times as much as it represents in the place to its right and  $\frac{1}{10}$  of what it represents in the place to its left.

**5.NBT.7** Add, subtract, multiply and divide decimals to hundredths, 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 and explain the reasoning used.

### **Lesson Rationale:**

During collaboration it was discussed that our students are using the subitizing learned in Kindergarten to add numbers in first grade. They know combinations that make ten. Students also use this knowledge to add two 1-digit numbers with a sum between 10 and 18. They are able to add multiples of 10 within 100.

The piece we felt was missing was adding a two digit and a one digit number where the addition of the ones results in a ten. Once this concept of adding ones together to make a ten is cemented, students can use this strategy to solve any addition problem

Within 1.NBT.4 are several concepts for first grade students to master. In preparation for adding two-digit numbers involving regrouping, students need to see the value in adding ones and ones to make a ten. Adding a two digit number to a one digit number where the ones compose a ten ( $24+6$ ) is the scaffolding piece to prepare students to add a two digit number to a one digit number where adding the ones and ones composes a ten and some more.

Lesson for the addition of a 2 digit number to a one digit number with regrouping.

	Anticipated Student Responses	Evaluation Points/Teacher Responses
<p>Begin lesson with review of the “make a ten” strategy using two one digit numbers. Students will be sitting on the floor.</p> <p><b>Pose 8+6 to the children.</b>  <b>T: I want you to think for a minute about how you would solve this problem using the make a ten strategy.</b></p> <p>Teacher calls children who can show their thinking of the make a ten strategy using manipulatives.</p> <p>If a student doesn’t share both make a ten strategies teacher should ask students if they see another way to make a ten.</p> <p><b>T: Wow! You guys are really good at seeing how important it is to make a ten! I am going to put this here to help me remember how important it is to make a 10.</b></p>	<p><b>Teacher would not highlight these responses but students might solve in this way.</b>            Student counts all counters.            Counting on from 8.            Counting on from 6.</p> <p><b>Teacher will highlight the following make a ten strategies:</b>            Student decomposes the 6 into 2 and 4. Student adds 2 to the 8 to make a ten. <math>10+4</math></p> <p>Student decomposes the 8 into a 4 and 4. Student adds a 4 to the 6 to make a ten. <math>10+4</math>.</p> <p>Student may decompose the 6 into a way that doesn’t make a ten. (1 and 5, 3 and 3)</p>	<p>Student understands the value of the “make a ten” strategy.</p> <p>T: Will that help us make a ten?</p>

Lesson for the addition of a 2 digit number to a one digit number with regrouping.

<p>Teacher posts sign that says... "Making a 10 makes adding easier!:" <b>T: This might help you later.</b></p> <p><b>T: You know we had some excitement this week. Can anyone tell me why Monday was such an exciting day for us?</b></p> <p><b>T: How many shamrocks did we find?</b> Teacher will pull out shamrocks labeled with 53.</p> <p><b>T: When I got to work today I found this letter from Mr. David who cleans our room every day.</b></p> <p>Teacher reads letter. <i>Dear Mrs. Hajdin, When I cleaned your room I found some shamrocks. I wasn't sure if you wanted them so I saved them for you in a baggie. I found 7 shamrocks. Sincerely, Mr. David P.S. Thank you for keeping your room so clean!</i></p> <p>Teacher should have a labeled bag with 7 shamrocks in it.</p> <p><b>T: With the shamrocks we had and the shamrocks Mr. David found, we really don't have 53 shamrocks. I have a challenge for you. I need you to help me figure out how many shamrocks we have now?</b> <i>Teacher posts challenge question. We found 53 shamrocks on Monday. Yesterday Mr. David</i></p>	<p>S: The leprechaun came for a visit and made a mess! S: The leprechaun came and left some shamrocks.</p> <p>S: He left 53 shamrocks around the room.</p>	
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Lesson for the addition of a 2 digit number to a one digit number with regrouping.

<p><i>found 7 shamrocks.</i> <i>How many shamrocks did the leprechaun really leave?</i></p> <p><b>T: Okay, Let’s talk about what is going on in this story without the numbers.</b></p> <p><b>T: What does the 53 mean in the story?</b> (Teacher hold ups the number 53 and places it on the board)</p> <p><b>T: What does the 7 mean in the story?</b> (Teacher holds up the number 7 and places it on the board.)</p> <p><b>T: What do we need to do with these numbers?</b></p> <p>Teacher should write a + sign in between numbers after suggesting addition.</p> <p><b>T: Why do we need to add them together?</b></p> <p><b>T: I want you to think silently for one minute about how you would solve this problem. Remember please do not shout out any answers!</b></p> <p><b>T: You will be working with a partner to solve this problem.</b></p> <p><b>T: When you sit down , you need to talk to your partner</b></p>	<p>S: We found lots of shamrocks on Monday. S: Mr. David found some shamrocks. S: We need to find out exactly how many shamrocks we found.</p> <p>S: the amount of shamrocks we found on Monday.</p> <p>S: The number of shamrocks Mr. David found.</p> <p>S: We need to count them S: We need to add them together.</p> <p>S: Because Mr. David found more shamrocks.</p>	<p>Do we really need to take out EVERY SINGLE SHAMROCK and count them one by one?</p> <p>If children are having difficulty discussing their strategy with each other, teacher should ask “How do you think we could solve this problem?”</p> <p>If students disagree on the best strategy suggest that they try one and then try the other one on the back of the paper.</p>
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Lesson for the addition of a 2 digit number to a one digit number with regrouping.

<p><b>first about how you want to solve this problem together.</b></p> <p>Manipulatives will be on the table for students who want to use them. Manipulatives used: Japanese Place value cubes, ten frames</p> <p><b>( Base Ten manipulatives could also be used)</b></p> <p><b>T:Once you have decided on how you will solve this problem raise your hand and I will give you and your partner the recording sheet. Please be prepared to share your strategy with the class.</b></p> <p>Send children to seat with partner to begin discussing.</p> <p>Students should work on solving problems.</p> <p>If students cannot agree on a strategy they can try both strategies.</p> <p>When all students have finished teacher should call students to the carpet with their partners to share their strategies. Teacher should post student strategies from simplest to complex. Teacher should also show the inefficiency (that it takes a long time) of the counting all or counting on strategies.</p> <p>The teacher should pay particular attention to the make a ten strategy. The</p>	<p>Students should be discussing their problem solving strategies.</p> <p>Strategies:</p> <ul style="list-style-type: none"> <li>• Counting all</li> <li>• Count each group of 10's (10,20,30,40,50,51,52, 53)</li> <li>• Counting on from 53 ( teacher should write numbers under each block)</li> <li>• Make a ten with manipulatives</li> <li>• <b>Make a ten without manipulatives (abstract level)</b></li> </ul>	<p>If students try to draw all shamrocks, teacher should ask: <b>Do you need to draw all shamrocks or is there a quicker way to show this on your paper? Can you make groups of ten?</b></p> <p>If someone counts incorrectly teacher should ask students to explain their counting.</p> <p>If a child tries to solve abstractly and is doing it incorrectly, teacher should say “ Why don’t you use your counters and see if you get the same answer.”</p> <p>If one child solves using manipulatives and one child wants to solve abstractly ask children to check the abstract strategy.</p> <p>If student says I added 3 and 7 to make a 10 teacher should ask “where did the 3 come from?”</p>
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Lesson for the addition of a 2 digit number to a one digit number with regrouping.

<p>students should see the usefulness of the make a ten strategy.</p> <p><b>T: Wow, you made a ten!! Why did you do that?</b></p> <p><b>T: I wonder if the Make a Ten strategy always work when we're adding big numbers.</b></p> <p><b>T: What if we were adding <math>42+8</math>?</b> Teacher posts on board.</p> <p><b>T: How about <math>94+6</math>=?</b> Teacher posts on board.</p> <p><b>T: How were you able to add these numbers so easily?</b></p> <p><b>T: We started our math lesson today with <math>8+6</math>. I have a really hard challenge for you. What if I asked you to solve <math>78+6</math>?</b> Teacher should post <math>8+6</math> next to <math>78+6</math> on the board.</p> <p><b>T:I want you to sit and think about what is the same about these two problems.</b></p> <p><b>T:What is the same ?</b></p> <p><b>T:What is different?</b></p> <p><b>T: Can we use the same strategy that we used to</b></p>	<p>S: I decomposed 53 into 50 and 3. I know that 3 and 7 makes a ten. I added 10 to 50 to make 60.</p> <p>S: I know my ten partners S: It is easy to add when you make tens.</p> <p>S: I know that <math>2+8</math> makes a ten and that <math>40+10</math> makes 50.</p> <p>S: I know that <math>4+6</math> makes a ten and then <math>90+10=100</math>!</p> <p>S: I made a ten.</p> <p>S: They both have an 8 and a 6. S: They both have <math>8+6</math>. S: We can make a ten to solve this problem.</p> <p>S:One has 78 and the other has just 8.</p>	
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Lesson for the addition of a 2 digit number to a one digit number with regrouping.

<p><b>solve <math>8+6</math> to solve this big problem, <math>78+6</math>?</b></p> <p>Students will go back to their seats with their partners to solve this problem. (<math>78+6</math>)</p> <p>Students will come back together to share their thinking. Teacher should only show the make a ten strategy at this point in the lesson.</p> <p><b>T:Wow! You guys are so smart! You showed some amazing thinking today. What did we learn today?</b></p> <p><b>Teacher should point to posted sign about the ten.</b></p> <p><b>If students solve quickly and easily teacher should direct students to math journals to solve similar problems.</b></p> <p><b>Teacher should give students a similar problem for independent practice for later in the day or for homework . (<math>38+6</math>)</b></p>	<p>S: Yes</p> <p>S: NO, they are not the same number.</p> <p>Possible Student Solutions</p> <ul style="list-style-type: none"> <li>• <math>8+2=10</math>, <math>70+10=80</math> and <math>80+4=84</math></li> <li>• <math>8+6=14</math>, count on from 70.</li> <li>• <math>8+6=14</math>, that's 10 and 4 so <math>70+10=80</math> and <math>80+4=84</math></li> <li>• Decomposing 6 into 4 and 2; and <math>78+2=80</math>, <math>80+4=84</math></li> <li>• Decomposing 78 into <math>74+4</math>; adding <math>4+6=10</math> and <math>74+10=84</math>.</li> </ul> <p>S: That making a ten makes it easier for us to add big numbers.</p>	<p>T:Let's solve it and find out.</p>
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