

## General Information

### Lesson Parts & Duration

Total Duration: 1 hour

- Addition and Subtraction Strategies: Compensation Model, Using Number Bonds, and Using Number Lines

### Subject(s)

- Adding & Subtracting within 100; Compensation Model, Number Bonds, Number Lines (2.NBT.B.5)

### Objective

- Students will add numbers within 100 in the context of one-step word problems using the compensation model.
- Students will add and subtract numbers within 100 in the context of one-step word problems using number bonds.
- Students will add and subtract numbers within 100 in the context of one-step word problems using a number line.

### Materials

- blank paper (1-2 pieces per student)
- pencil
- document camera or whiteboard
- **Optional:** printable “Addition and Subtraction Strategies” (pages 9-10)
- **Optional:** printable “Exit Slips” (page 8)
- **Optional:** printable “Break Up Your Day” brain/movement break ideas (page 11)

### Throughout this lesson, you will find:

- ☀ **Scripted Text** indicates things that need to be said directly. Bullets starting with a “T” followed by *italicized type* indicate scripted text
- ☀ **Clarifiers** within scripted text are in orange
- ☀ **Teacher Directions** indicate things you should be doing
- ☀ **Side notes** provide helpful hints, ELL strategies, differentiation and information
- ☀ **Break Up Your Day** (Brain/Movement Breaks) are in green boxes (at the end)

### Remember!

Quality over quantity. All components do not have to be accomplished; lessons may be ended at any time and resumed later.

## Instructional Plan: 60 minutes

### Introduction

- T** There are many ways to solve problems in both real life and in math.
- T** Today we will be exploring several strategies you can use to solve addition and subtraction problems.
- T** Then, at the end of the lesson you will choose which strategy you like best and you will independently solve two word problems using the strategy of your choice.
- T** You may have already learned some of these strategies either this year or last year.
- T** If you remember using the strategy already, that is great, this will be more of a review for you!

Pass out “Addition and Subtraction Strategies” paper to each student –or– give each student a piece of paper and project it for students to copy.

### Setting up the Paper

- T** Write your name in the top right hand corner of your paper.  
*See example & model so students can follow.*
- T** We are going to solve an equation in 3 different ways.
- T** We will use a method of creating 10's called the compensation model.
- T** We will break apart our numbers and create number bonds and last, we will use a number line.
- T** Let's start by examining our word problem.
- T** The problem says: “George won 56 tickets at the school carnival playing one game. Then he decided to play another game and won 17 more tickets. How many tickets did he have in all?”
- T** Who can tell me what is the important information in this problem?
- T** I like to underline the important information. *Call on students to share the important information. Answer: 56 tickets, 17 more tickets.*
- T** So, we can underline 56 tickets in our problem and 17 more tickets.
- T** The last thing I like to do is to circle the question.
- T** What is this problem asking us to solve? *Call on a student to share the question. Answer: How many tickets did he have in all?*
- T** So, let's all circle “How many tickets did he have in all?”
- T** Now that we have found all of the important information in the problem and we have identified the question, we need to create an equation to solve this problem.
- T** Please turn and tell a person next to you if you think we need to add or subtract to solve this problem.
- T** You should defend your answer by telling your partner what clue word(s) helped you to know how we should solve the problem.

Provide about 30 seconds for a quick partner discussion. Monitor conversations to ensure they are on topic.

- T** Who would like to share which operation they think we should use and what the clue word was that helped you. *Call on several students to share their idea(s). Answer: addition; in all*
- T** Okay, (student's name) says addition because of the words “in all”.
- T** Now we are ready to write an equation.
- T** Our equation is “ $56 + 17 =$ ”.
- T** Let's read the problem one last time to make sure our equation is reasonable; we will put a check mark over each number in our equation once we hear that part in the problem.

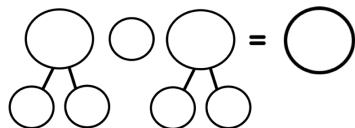
Name: \_\_\_\_\_

Addition and Subtraction Strategies


George won 56 tickets at the school carnival playing one game. Then he decided to play another game and won 17 more tickets. How many tickets did he have in all?

Compensation Model (Making 10's)

Number Bonds



Number Lines



**T** “George won 56 tickets at the school carnival playing one game. Then he decided to play another game and won 17 more tickets. How many tickets did he have in all?”

✓  
 $56 + 17 = ?$

✓ ✓  
 $56 + 17 = ?$

## Compensation Model

**T** First we will write out our equation: “ $56 + 17 =$  .”

**T** When using the compensation model, we want to turn one of the numbers in our equation to a multiple of 10: 10, 20, 30, 40, 50, 60, 70, 80, 90, and so on.

**T** So, in our equation I can either turn 56 to the next 10, which is 60 or 17 to the next 10, which is 20.

**T** It is easier to turn the larger number into the next 10.

**T** To do this, we need 4 more to turn 56 to 60.

**T** So, we will regroup by taking away 4 from 17, so I will write -4 below the 17 and then we will add that 4 to 56, so I will write +4 below 56.

**T** Now let's solve,  $56 + 4$  is 60 and  $17 - 4$  is 13.

**T** It is much easier to add a multiple of 10, now we have  $60 + 13$ .

**T**  $60 + 13 = 73$

**T** We can't forget to clearly write and label our answer to the question.

**T** So, I will write: “He has 73 tickets in all.”

## Number Bonds

**T** When using number bonds, we will write our equation, but this time we will use the top circles to write our initial problem: “ $56 + 17$ .”

**T** Next, we will break apart our larger numbers into more manageable parts.

**T** I do this by separating the tens and the ones.

**T** So, for 56, I will break it apart into 50 and 6 because there are 5 tens and 6 ones.

**T** If I wanted to, I could break it apart even farther and make 6: 5 and 1, but for now I will just break each number apart into tens and ones.

**T** Next, we will break apart 17 into 10 and 7 because there are 1 ten and 7 ones.

**T** Now we are ready to add our parts.

**T** Let's start by adding our tens:  $50 + 10 = 60$ .

**T** Then we will add our ones:  $6 + 7 = 13$ .

**T** Finally, we can combine both answers by adding both sums together:  $60 + 13 = 73$ .

## Number Lines

**T** The last strategy I will teach you today is using number lines.

**T** This is a strategy that I am sure that you have used before.

**T** Just like with our number bonds we will be breaking apart one of our numbers into smaller parts using 10's, 5s, and 1's.

Name: \_\_\_\_\_

### Addition and Subtraction Strategies

George won 56 tickets at the school carnival playing one game. Then he decided to play another game and won 17 more tickets. How many tickets did he have in all?

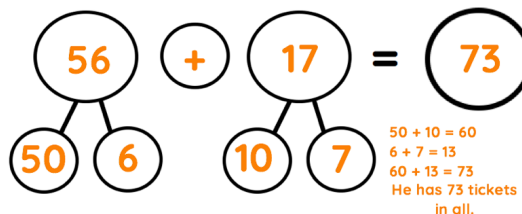
#### Compensation Model (Making 10's)

$56 + 17 = ?$

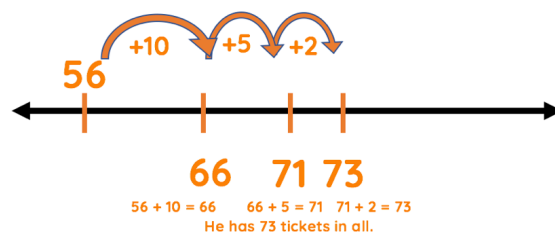
$\begin{array}{r} +4 \quad -4 \\ 56 + 17 \\ \hline 60 + 13 \end{array} = 73$

He has 73 tickets in all

#### Number Bonds



#### Number Lines



**T** We start by putting the first number or the larger number of our equation on the number line.

**T** You may know that because of the commutative property it doesn't matter the order that you add numbers in, the answer will always be the same.

**T** So,  $56 + 17 = 17 + 56$ .

**T** When using a number line, it is important to start with the larger number so that you do not have to do as many hops on your number line.

**T** Let me show you what I mean.

**T** Start by drawing a line and writing a 56.

**T** Now we will hop by 10's, then 5's and then by any remaining ones.

**T** To make 17, I see that there is 1 ten.

**T** So, I will draw an arrow to the right from 56 and under the arrow I will write + 10.

**T** Now, I will write the answer of that equation ( $56 + 10$ ) on my number line, 56 + 10 which is 66.

**T** 17 has 7 ones, but I can break that up even easier to a 5 and 2 more ones.

**T** So, I will draw an arrow to the right from 66 and under the arrow I will write + 5.

**T** Now, I will write the answer of that equation ( $66 + 5$ ) on my number line, which is 71.

**T** Last, I will draw an arrow to the right from 71 and under the arrow I will write + 2.

**T** Now, I will write the answer of that equation ( $71 + 2$ ) on my number line, which is 73.

**T** Finally, I can write the answer to my equation, "He has 73 tickets in all."

Name: \_\_\_\_\_

#### Addition and Subtraction Strategies

George won 56 tickets at the school carnival playing one game. Then he decided to play another game and won 17 more tickets. How many tickets did he have in all?

#### Compensation Model (Making 10's)

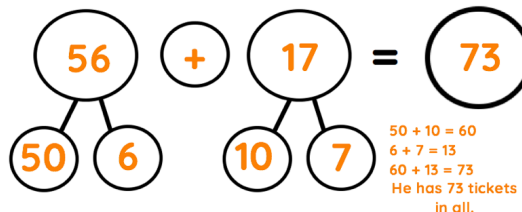
$$56 + 17 = ?$$

$$+4 \quad -4$$

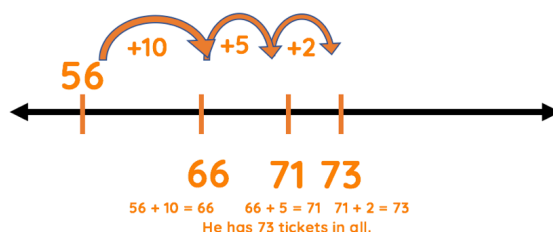
$$60 + 13 = 73$$

He has 73 tickets in all

#### Number Bonds



#### Number Lines



### Using Strategies with Subtraction

**T** We have just solved the same addition equation using 3 different strategies.

**T** All of these strategies also work for subtraction.

**T** However, the compensation strategy is slightly different.

**T** So, I would like you to only use number bonds and the number line as your strategies for subtraction.

**T** I am going to assign you a partner.

**T** On a separate sheet of paper, you will try to solve a new word problem that involves subtraction using those two strategies.

**T** This will be slightly different and possibly trickier; remember you are subtracting now.

**T** So, take your time and use what you know about subtraction when trying to figure out how to solve a subtraction problem using these same strategies.

**T** Then once everyone is mostly done, we will review your answers as a whole class.

**T** And then after that I will give you your own challenge!

**T** You will need to solve 2 equations independently without your partner.

**T** 1 will be an addition problem and 1 will be a subtraction problem.

**T** You will get to choose which strategy you prefer when solving the 2 equations.

**T** You may even want to choose a different strategy to solve each problem!

**T** But for now, let's take a quick break and then I will put you into partners.



Now is a great time to take a break and get students re-energized.

See our list of engaging movement and brain break ideas to get your students moving and ready to refocus! (see page 11)

Put students with a partner, give them each a piece of paper, and project the next word problem on the board for them to solve. Give about 10-15 minutes for students to attempt to solve the subtraction word problem involving the 2 strategies.

**T** Now that everyone has had the chance to solve this subtraction word problem using our two strategies of number bonds and number lines, let's review the correct answers.

## Number Bonds

**T** When using number bonds, we will write our equation first in the top circles:  $47 - 22 =$

**T** Next, we will break apart our larger numbers into more manageable parts.

**T** I do this by separating the tens and the ones.

**T** So, for 47, I will break it apart into 40 and 7 because there are 4 tens and 7 ones.

**T** Next, we will break apart 22 into 20 and 2 because there are 2 tens and 2 ones.

**T** Now we are ready to subtract our parts.

**T** Let's start by subtracting our tens:  $40 - 20 = 20$ .

**T** Then we will subtract our ones:  $7 - 2 = 5$ .

**T** Finally, we can combine both parts:  $20 + 5 = 25$ .

**T** This is the tricky part with subtraction.

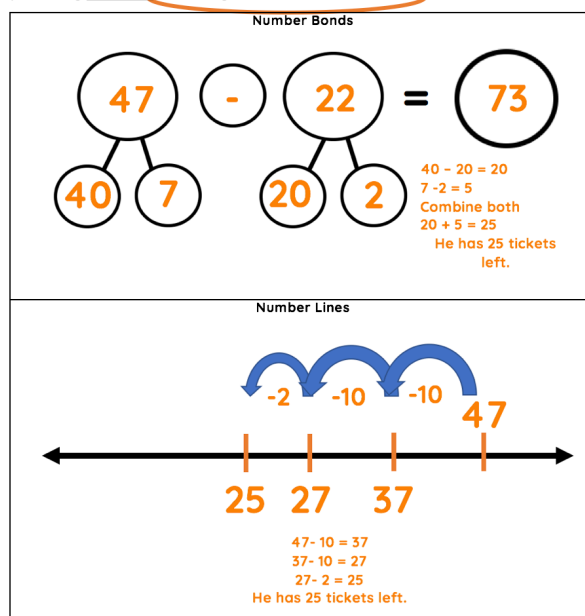
**T** We subtract the different place value parts, but then in the end we must combine or add those two answers together.

**T** So, our final answer is: "He has 25 tickets left."

Name: **ANSWER KEY**

### Addition and Subtraction Strategies

George won 47 tickets at the school carnival playing one game. Then he decided to buy a prize using 22 tickets. How many tickets does he have left?



## Number Lines

**T** The second strategy is using number lines.

**T** This is a strategy that I am sure that you have used before.

**T** We start by putting the first number or the larger number of our equation on the number line.

**T** Because this is a subtraction problem, we will be moving backwards or to the left on our number line.

**T** So, I will start by writing 47 on the right side of the line.

**T** Now we will hop back, or to the left, by 10's, 5's, or 1's.

**T** To make 22, I see that there are 2 tens.

**T** So, I will draw an arrow to the left from 47 and under the arrow I will write - 10.

**T** Now, I will write the answer of that equation ( $47 - 10$ ) on my number line,  $47 - 10$  which is 37.



**T** I know that there is another 10 in 22, so I will draw another arrow to the left from 37 and under the arrow I will write - 10.

**T** Now, I will write the answer of that equation (37 - 10) on my number line, 47 - 10 which is 27.

**T** Last, I need to focus on any 5s or 1s, since there are no 5s, I will draw my last arrow and under it I will write -2.

**T** I will write the answer of that equation (27 - 2) on my number line, which is 25.

**T** Finally, I can write the answer to my equation, "He has 25 tickets left."

### Exit Slip (Assessment Component)

**T** Now that you have had the chance to solve both addition and subtraction word problems using several strategies, it is time to show your teacher what you have learned!

**T** Remember that you can choose whichever strategy you would like to use to solve each problem.

**T** You do not need to use the same strategy on both.

**T** Another tip is that you can possibly use a second strategy to check you work!

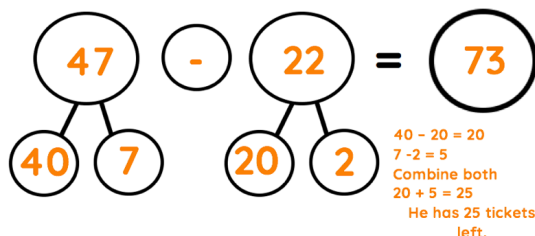
**T** Let's quickly review: read the word problems carefully, identify the important information, circle the question, determine how to solve addition or subtraction and pick a strategy to use and solve.

Name: **ANSWER KEY**

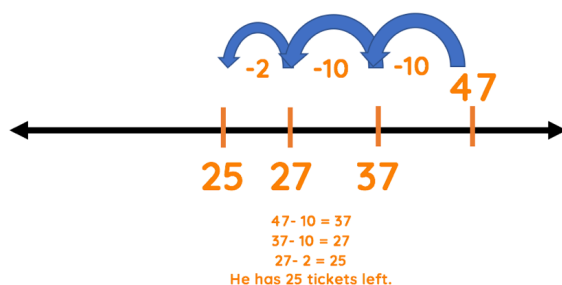
#### Addition and Subtraction Strategies

George won 47 tickets at the school carnival playing one game. Then he decided to buy a prize using 22 tickets. How many tickets does he have left?

#### Number Bonds



#### Number Lines



**\*You may use the exit slip at the end of this lesson as a quick assessment of student understanding. Either print them out (page 8), or simply have students copy the problems on a half sheet of paper. Answer key found on next page.**

Name: \_\_\_\_\_ Date: \_\_\_\_\_

**Exit Slip:**

Addition and Subtraction within 100

**Problem #1**

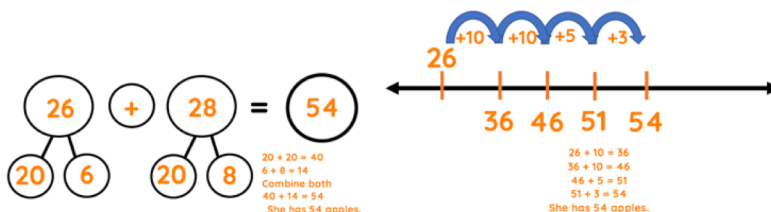
Mary went to the market to buy apples for each student in her class. She bought 26 apples. Then she decided to also buy apples for the students in her brother's class and bought 28 more apples. How many apples did she have altogether?

$26 + 28 = ?$

+4      -4

$30 + 24 = 54$

She has 54 apples.



**Problem #2**

Juan has a sticker collection. He had 78 stickers total. His friend Marco wanted to have a sticker collection too so he gave his friend a sheet of 26 stickers. How many stickers does Juan have left?



**Make sure to “Break Up Your Day!”**



Now is a great time to take a break and get students re-energized. See our list of engaging movement and brain break ideas to get your students moving and ready to refocus! (see page 11)

Name: \_\_\_\_\_ Date: \_\_\_\_\_

**Exit Slip:**

Addition and Subtraction within 100

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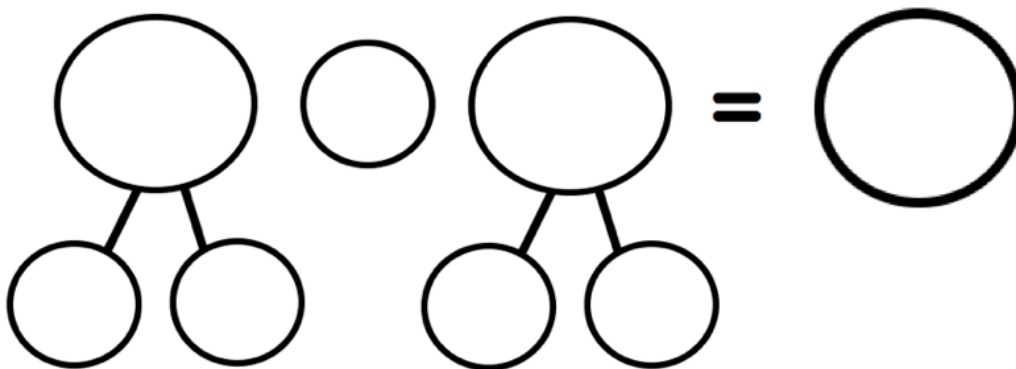
Name: \_\_\_\_\_

**Addition and Subtraction Strategies**

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**Compensation Model (Making 10's)**

**Number Bonds**



**Number Lines**

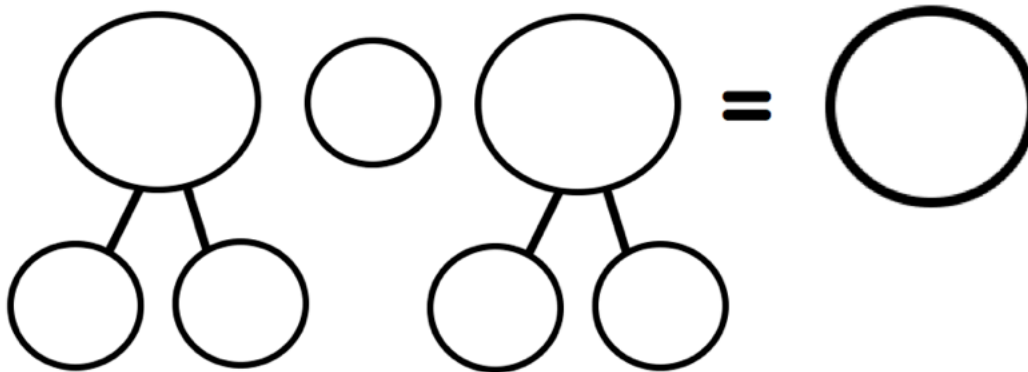


Name: \_\_\_\_\_

**Addition and Subtraction Strategies**

George won 47 tickets at the school carnival playing one game. Then he decided to buy a prize using 22 tickets. How many tickets does he have left?

**Number Bonds**



**Number Lines**



## Make sure to “Break Up Your Day!”

These can be used in the middle of a lesson or at the end of your lesson.  
Here are a few engaging movement and brain break ideas to get your students moving and ready to refocus!



### Break Up Your Day: You're Out of Order!



- Students buddy up and say 5 single-digit numbers out loud.
- The second buddy must repeat the numbers backwards!
- Reverse roles.
- Repeat three times. (example: Buddy 1 says, “My numbers are 5, 3, 6, 7, 1.” Buddy 2 says, “Your numbers were 1, 7, 6, 3, 5.”)



### Break Up Your Day: Count Down!



- Challenge students to write as many multiplication facts as possible in one minute. (example:  $1 \times 2 = 2$ ,  $2 \times 5 = 10$ ,  $3 \times 3 = 9$ , etc.)
- Students trade papers with a shoulder buddy and the buddy counts the correct facts.
- Whoever has the most correct facts may share their facts with the class (if document camera is available) or they simply become the new Count Down Kid!



### Break Up Your Day: Body Stretches!



**10 minutes**

**FORMATION:** Standing at desks

- Have students begin the day with a series of simple activities lasting 30 seconds or more: jumping jacks, knee lifts, flap arms like a bird, hopping, scissors (feet apart then cross in front, feet apart then cross in back)...
- Follow each activity with a basic stretching movement:
- Reach for the sky runner's stretch
- Butterfly stretch (sit with bottom of feet together)
- Knee to chest, rotate ankles, scratch your back

Hold stretches for 10 - 30 seconds. Repeat a different simple activity followed by a new basic stretch as many times as desired.