General Information

Lesson Parts & Duration

Total Duration: 1 hour

- Game: "Number Line Race"

Subject(s)

- Adding & Subtracting within 100; Mental Math, Number Lines (2.NBT.B.5)

Objective

- Students will add and subtract using mental math and number line strategies.

Materials

- portable student dry erase boards (1 per team) –or- use paper and a marker
- document camera or whiteboard
- **Optional:** printable "1s" (page 7) "5s" (page 8) "10s" (page 9) –or- write 10s, 5s, and 1s largely on paper or index cards (make 2-3 copies of each page preferably 3-4 students will be 10's, 1 student should be a 5, and 4 students should be a 1 per team)
- **Optional:** printable "Break Up Your Day" brain/movement break ideas (page 10)

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)

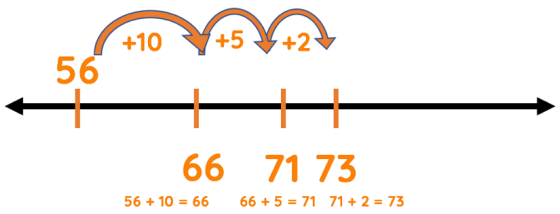
Remember!

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: Addition and Subtraction on a Number Line

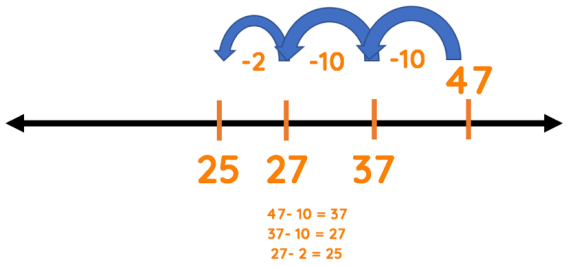
- ***T*** *Today I will teach you the strategy of using number lines to help solve addition and subtract problems.*
- ***T*** *This is a strategy that I am sure you have used before.*
- ***T*** *We will be breaking apart one of our numbers into smaller parts using 10's, 5s, and 1's.*
- ***T*** *We start 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.*

Subtraction Number Line

- ***T*** *Let's try this strategy again, but now to solve a subtraction problem.*
- ***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."*
- ***T***

Let's Go Outside!!

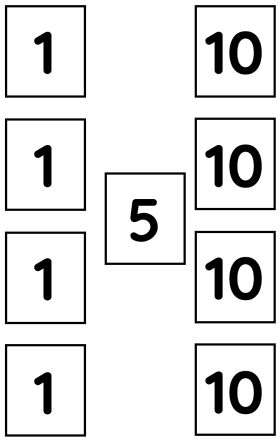
Activity: Number Line Race!

Setting Up the Teams:

- Divide students into teams (8-12 students per team)
- Each team will line up (preferably on opposites sides of a basketball court)
- Assign students on each team a number value of 10, 5, or 1 (preferably 3-4 students will be 10's, 1 student should be a 5, and 4 students should be a 1)

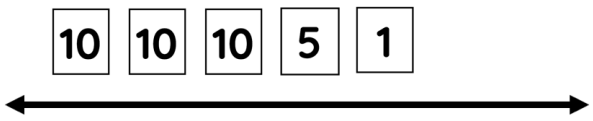
How to Play

T *We are going to play a game called, "Number Line Race."*
T *I will put you in teams of 8-10.*
T *Each player on your team will be assigned a value of 10, 5, or 1.*
T *You will have multiple people on your team with the same number value.*
T *You are going to be creating a human addition or subtraction number line.*
T *The job of your team is to determine the correct number or jumps on the number line you need to make to solve the equation.*
T *The goal is for your team to create the correct number line and write an equation that matches.*
T *I will tell you an addition or subtraction problem.*
T *Let me show you what I mean by demonstrating what your team will do with some volunteers.*
T *Who would like to help me?* Pick 8-10 students to help demonstrate.
T *4 of my team members will hold the "1" card.* Give a number 1 card to those team members.
T *1 of my team members will hold the "5"card.* Give a number 5 card to one team member.
T *Last, the remaining members of my team will hold the "10" card.* Give a number 10 card to those team members.



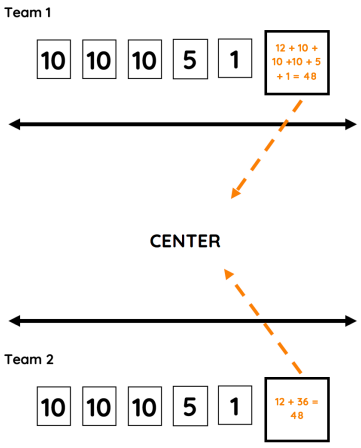
T *I will give the teams an addition or subtraction equation to solve.*
T *For example: 12 + 36 =.*
T *Your team will start your number line with the first number in the equation, so in this first example your team will start at 12.*
T *Next, your team must create a human number line using jumps of 10, 5, and 1.*
T *In this example, your team needs to make a jump of 36.*
T *How can we make 36 using, 10's 5s, and 1's?* Call on students to share their ideas. Answer: 3- 10s, 1- 5, and 1- 1.
T *Ok let's use my team members to show this on our imaginary number line.*

Line up 3 students in a row each holding a 10 card, then 1 student holding a 5 card, last 1 student holding a 1 card.



T *Now we can see the number 36 broken up into 5 numbers: 10, 10, 10, 5, and 1.*
T *Each round you will have a writer/runner.*
T *This is a member who is not on the number line, they will write the equation and the answer on either a dry erase board or paper.*

- ***T*** *So, for this problem they would write: 12 + 10 + 10 +10 + 5 + 1 = 48.*
- ***T*** *Once your team believes they have the correct answer written down with an equation that matches your team number line, the writer/runner will run to the center.*
- ***T*** *If your team member gets to the center before the other team(s) and the answer on your paper/dry erase board is correct, your team earns a point.*
- ***T*** *The important thing to remember is that your dry erase board must match your number line.*
- ***T*** *If there was another team that made the correct number line with: 10, 10, 10, 5, 1, but then the answer they wrote was: 12 + 36 = 48, although that equation is correct, it doesn't match the teams number line.*
- ***T*** *So, team 1 would get the point, not team 2.* Either project the example to the right on the board, or write it out for the students to visually see.



- ***T*** *Now I will put you into teams, give you a number card and we will try a few more practice problems.*

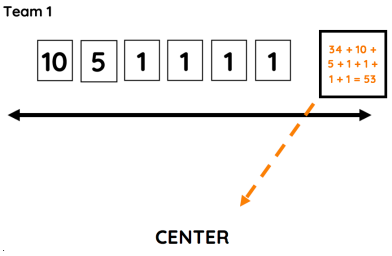
Put students into teams of 8-10 students. If you are unable to make 3 teams, separate the students equally into 2 teams. Make sure each team has at least 3- "10s", 1- "5", and 4- "1s", and a dry erase board or paper to write their teams answer to each problem.

Team Practice

While going through these practice problems make sure you are both assisting and explaining the process each time. This way students will get practice and a better understanding of the game before the points start.

- ***T*** *Each member of your team should now be holding a number card with a value of 10, 5, or 1.*
- ***T*** *Please do not trade cards.*
- ***T*** *To be fair, each member on your team will take a turn to be the writer/runner for one round.*
- ***T*** *That means you will each get to write out the equation that matches your teams number line, the correct answer, and then try to run to the center first.*
- ***T*** *We will now complete 4 practice problems.*
- ***T*** *Your team will need to stand together in a huddle.*
- ***T*** *Only the team members you are using to represent the equation should be standing in a straight "number line."*
- ***T*** *Everyone else should be off to the side.*

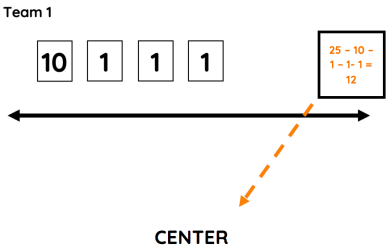
Practice Problem # 1



- ***T*** *Practice problem # 1: 34 + 19 =.*
- ***T*** *Your number line is starting at 34, using each of your number values you need to make "19" on your number line.* Answer: 10, 5, 1, 1, 1, 1
- ***T*** *Then on your dry erase board/paper write out your equation, remember to start with 34 +, and then add on the numbers that you used on your team number line.* Answer: 34 + 10 + 5 + 1 + 1 + 1 + 1 = 53
- ***T*** *When you think you have the correct answer written down, leave your answer with your team and run to the center.*
- ***T*** *I will check to see if the first person to reach the center first has the correct answer.*
- ***T*** *If they do not have the correct answer, the other team(s) has the chance to win still.*

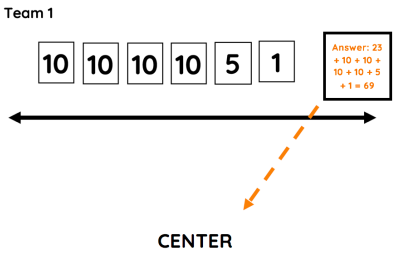
Practice Problem # 2

- ***T*** *Switch so that you have a new team member as your writer/runner.*
- ***T*** *Practice problem # 2: 25 – 13 =.*
- ***T*** *Be careful this problem is subtraction.*
- ***T*** *So, your team is starting at 25 and taking away 13.*
- ***T*** *Using each of your number values you need to make "13" on your number line.* Answer: 10, 1, 1, 1
- ***T*** *Then on your dry erase board/paper write out your equation, remember to start with 25 -, and then add on the numbers that you used on your team number line.* Answer: 25 – 10 – 1 – 1- 1 = 12
- ***T*** *When you think you have the correct answer written down, leave your answer with your team and run to the center.*
- ***T*** *I will check to see if the first person to reach the center first has the correct answer.*



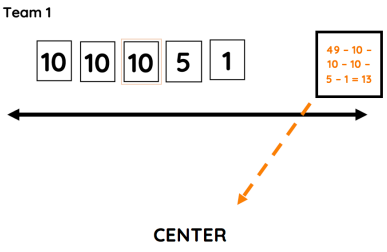
Practice Problem # 3

- ***T*** *Switch so that you have a new team member as your writer/runner.*
- ***T*** *Practice problem # 3: 23 + 46 =.*
- ***T*** *So, your team is starting at 23 and adding 46.*
- ***T*** *Using each of your number values you need to make "46" on your number line.* Answer: 10, 10, 10, 10, 5, 1
- ***T*** *Then on your dry erase board/paper write out your equation, remember to start with 23 +, and then add on the numbers that you used on your team number line.* Answer: 23 + 10 + 10 + 10 + 10 + 5 + 1 = 69
- ***T*** *When you think you have the correct answer written down, leave your answer with your team and run to the center.*
- ***T*** *I will check to see if the first person to reach the center first has the correct answer.*
- ***T*** *Last practice problem and then we will start playing for points!*



Practice Problem # 4

- ***T*** *Switch so that you have a new team member as your writer/runner.*
- ***T*** *Practice problem # 4: 49 – 36 =?*
- ***T*** *Be careful this problem is subtraction.*
- ***T*** *So, your team is starting at 49 and taking away 36.*
- ***T*** *Using each of your number values you need to make "36" on your number line.* Answer: 10, 10, 10, 5, 1
- ***T*** *Then on your dry erase board/paper write out your equation, remember to start with 49 -, and then add on the numbers that you used on your team number line.* Answer: 49 – 10 – 10 – 10 – 5 – 1 = 13
- ***T*** *When you think you have the correct answer written down, leave your answer with your team and run to the center.*
- ***T*** *I will check to see if the first person to reach the center first has the correct answer.*



Let's Play!

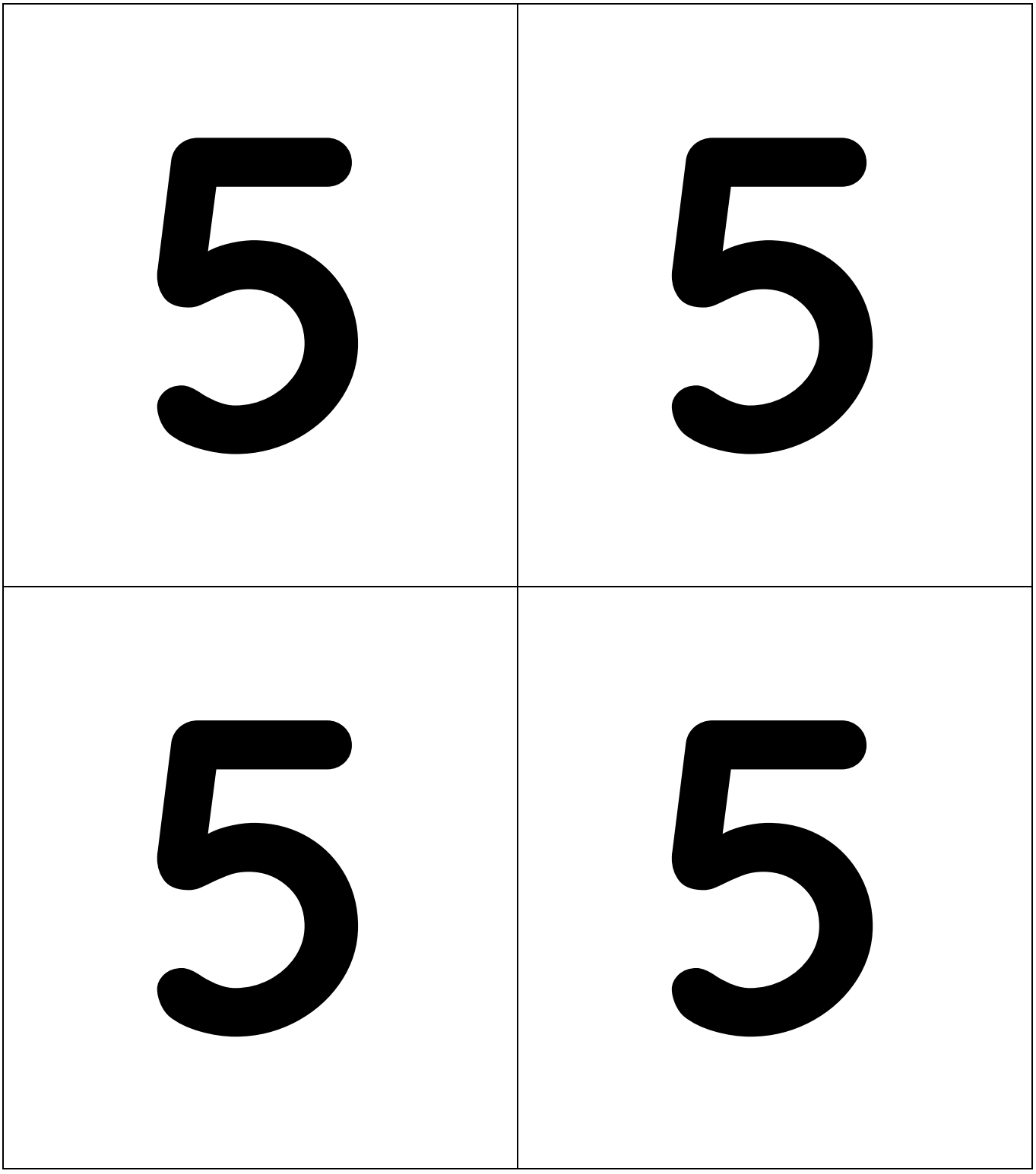
- ***T*** *Now your team will be playing for points.*
- ***T*** *Remember your team will need to uses 10s, 5s, and 1s to create the second number of the equation on your team number line, your writer/runner for the round will then write out the equation that matches your team number line and last will run to the center.*

T *The team that gets to the center first with the correct answer earns the point!*

Proceed by calling out addition or subtraction equations. If you run out, feel free to create some of your own. Just be sure that the total does not exceed 100 and that they do not need more 10s to create their number line than they have. For example, I cannot give the team 12 + 56, if they only have 4- 10s. They would need 5- 10s to make 56.

Problems	Number Line Cards Needed	Correct Equations
1. 34 – 20 =	10, 10	34 – 10 – 10 = 14
2. 60 + 23 =	10, 10, 1, 1, 1	60 + 10 + 10 + 1 + 1 + 1= 83
3. 16 – 6 =	5, 1	16 – 5 – 1 = 10
4. 83 + 11 =	10, 1	83 + 10 + 1 = 72
5. 63 – 23 =	10, 10, 1, 1, 1	63 – 10 – 10 – 1 – 1 – 1 = 40
6. 63 + 26 =	10, 10, 5, 1	63 + 10 + 10 + 5 + 1 = 89
7. 23 – 13 =	10, 1, 1, 1	23 – 10 – 1 – 1 - 1 = 10
8. 30 + 27 =	10, 10, 5, 1, 1	30 + 10 + 10 + 5 + 1 + 1 = 57

1	1
1	1



10	10
10	10

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 x 2 = 2, 2 x 5 = 10, 3 x 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.