Lesson Plan #1, B. Frakes

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| Standard |
| 2.NBT.B.6 Add up to four two-digit numbers using strategies based on place value and properties of operations. |
| Objective |
| I can create a model using base ten blocks of an addition problem to find the sum of three to four addends. I can double check my work using two additional strategies. I can explain my thinking. |
| Background Knowledge |
| * Helpful pre-requisite knowledge is number sense in building numbers with base ten blocks. It includes regrouping when putting numbers together (trading 12 ones for one ten and 2 ones).
* Additionally, number strings strategies from math meeting are necessary (splitting, decomposing, using money, jumps of ten, and friendly numbers).
* Finally, the knowledge of how to place numbers on a number line and how to add on a number line is necessary.
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| Possible Misconceptions |
| Misconceptions I foresee happening are:1. Focusing on drawing the base ten blocks rather than the lesson. One way I will address this is that in modeling, I will discuss the reasons for just doing quick drawings rather than highly detailed drawings.
2. Incorrect regrouping when there are numbers that add up to more than 10 ones or 9 hundreds. I will address this by having a similar problem but with two two-digit numbers in our warm up so that we can discuss what to do early in the day. Additionally, I will have the problems we use for modeling need regrouping and I will focus on this as a major part of the lesson.
3. Incorrect placement of the starting number and spacing on the number lines

I will let students know that if they are working independently and are stuck or find two answers that do not match, they may talk at their table groups. I will say, “ If you need to discuss your thinking with someone to clarify, you can ask someone at your table who is working on the same problem. I’d like you to say, “\_\_\_\_\_, can we talk about #3. Here’s what I am thinking\_\_\_\_\_\_\_\_\_\_\_.”I will circulate and look at work sampled to gauge where students are at in the process. I expect to see attempts at all aspects of the sheet. I would only intercede if they completed the either the whole sheet incorrectly or if one of their answers did not match the other two and they had moved on. I want them to make mistakes and uncover their own mistakes. If they are doing a part of the algorithm incorrectly, I will prompt them by saying, “Let’s look at \_\_\_\_\_.Talk me through your thinking.” Part of the process and the reason that we are solving the problems in three ways to prove or disprove our thinking is so that the students will see math as flexible and learn that there is more than one way to solve a problem. |
| DOK Levels/Activities |
| Level 2 Understand: Use mathematical models/diagrams to represent or explain mathematical conceptsLevel 3 Evaluate: Describe, compare, and contrast solution methodsLevel 4 Evaluate: apply understanding in a novel way, provide argument or justification for the application |
| Materials |
| Base ten blocksBuild A Number Sheets |
| Engage |
| Today we are going to be working on putting numbers together. In the past, we have done the same thing with just two pairs of numbers. If I told you that when Noah and Nicholas and I went to Target, we spent $37 on an Angry Birds game and then $16 on Despicable Me 2 and I wanted to know how much we spent, how would you find out how much money we spent? (solicit answers and make a list on the board include number talk strategies and tools)If the story changed and I told you that we spent $37 on an Angry Birds game, $16 on Despicable Me 2, and then I went over to the grocery store and spent $63 on food and another $24 on some flowers, how would you find out how much money we spent? (Solicit answers and make check next to the ones that are the same.)We will spend today working on adding four numbers and checking our answers using some of the strategies we see here (point to list on board.) |
| Examine |
| Well, we talked about how we would find an answer to that problem, but we didn’t actually find an answer! Help me think through this. We spent $37 on an Angry Birds game, $16 on Despicable Me 2 and $63 on groceries and $24 on flowers. How much money did we spend while we were out shopping? Well, it fits my brain to build these numbers with base ten blocks. (T will call 4 students to build the numbers. T will model using magnets of base ten blocks.) I think it is a good idea to always double check my work using another way. What other tools could I use?\*When a student suggests a number line or a number strings strategy, have them model on the board.Try to include the following questions, if the situation presents:Number Line:* Why did you start with that number?
* How many jumps do you know to take? How did you know that?

Number Talk Strategies:* Why did you choose that strategy?
* Is it okay to add numbers in any order that I want? Why does that work?
* Does it work with subtraction? Why or why not?

I have a question. What would be happening if my number line answer did not match my other two answers? What would that tell me? What would I need to do about that? How do you know?\*This work will be left up as a model and criteria for success.  |
| Explore |
| Now, it is your turn to practice. You are going to solve this problem with a partner. Yesterday, I was watching football replays. Collin Kapernick threw a ball for 47 yards. Then in the next play, then threw the ball 23 yards. Crabtree ran the ball on the next play for 35 yards. Then Davis ran the ball 45 yards! It was so exciting! How many yards did the team move the ball during the time I was watching? (T will list the numbers on the board as she says them.)With a partner, you will first build these numbers with base ten blocks and then you will check your answer using a number line and a number strings strategy.Finally, I want you to answer these questions with your partner. There is a space for you to write your answer, too.  |
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| Okay, mathematicians, it is time for us to look at our work. (T will call students to share their thinking. T will call on students who solved the same problem using different strategies as well as a student who has a misconception if available. Ss will explain their thinking and receive feedback from peers.) |
| Extend |
| Today, we worked on putting numbers together. We can add more than two numbers at a time and use strategies that we already know.We learned from (use student work samples) that there is more than one way to get the answer and that some strategies fit some brains in different ways. |
| Evidence of Learning/Assessment |
| The students will each turn in their activity. There are written components where the students will need to explain their thinking. Students will also verbally explain their thinking in presenting their activities.Because this is the first day of this objective, I, of course want to see if the students get the correct answer, but almost as important to me is the diagnostic of where they are with their understanding. I want to know if they can build and combine numbers with regrouping, if they can represent their thinking on a number line, and which strategies they use for which numbers. Based on this diagnostic, I will know which areas students need extra support in to be successful. *\*The skill of being able to add four two-digit numbers is first done by being able to add three two-digit numbers. A few students are still in the stage of needing to add three two-digit numbers and when they have shown mastery/confidence/skill, they will be moved to four two-digit numbers.* |