**Adding 3 Two-digit Numbers**

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| In this lesson, students explore strategies to add three two-digit numbers. |

**NC Mathematics Standard(s):**

**NC.2.NBT**. **6:** Add up to three two-digit numbers using strategies based on place value and properties of operations.

**Additional/Supporting Standards:**

**NC.2.NBT.7:** Add and subtract, within 1,000, relating the strategy to a written method, using:

● Concrete models or drawings

● Strategies based on place value

● Properties of operations

● Relationship between addition and subtraction

**NC.2.NBT.8:** Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a givennumber 100–900.

**Standards for Mathematical Practice:**

1. Make sense of problems and persevere in solving them

2. Reason abstractly and quantitatively

3. Construct viable arguments and critique the reasoning of others

6. Attend to precision

7. Look for and make use of structure

**Student Outcomes:**

* I can add three two-digit numbers using a strategy.
* I can explain my strategy.
* I can use a second strategy to solve this problem.

**Math Language:**

**What words or phrases do I expect students to talk about during this lesson?**

I added, tens, ones, hundreds, I grouped \_\_, my strategy is, I solved the problem by, expanded form, place value

**Materials:**

* timer
* pencil and paper to record and explain strategies
* have manipulatives available, such as base ten blocks, Unifix cubes, hundred boards
* sticky notes-individually labeled with an “a,” “b,” and “c” for each team.

**Advance Preparation**:

* Paper for each group.
* Have manipulatives in an accessible place.
* Decide how you will group students in teams of three.
* Set of three labeled sticky notes with “a” “b” and “c” for each team

**Launch:** **Team Push-ups!** (10 minutes)

1. Ask: How many of you like to exercise? What type of exercises do you like? Do you enjoy PE? Have you ever been on a sports team before? What did you play?
2. We are going to synergize in exercising today! Explain that students will work in groups of 3. Each team member will get a sticky note labeled “a,” “b,” or “c”. Students will do push-ups for 15 seconds. The “a” students will go first. The teacher will time them. The other team members will count the number of push-ups out loud. When time is up, the student who just finished will record his/her number of push-ups on the paper. Repeat for students “b” and “c”. Once students are in groups and have a designated space, model doing a push-up. Then begin the activity.
3. Teams will calculate the total number of push-ups for their team. Be ready to explain your strategy and record your work! You may use manipulatives to help you.

**Explore:** Solve! (15-20 minutes)

Students will work to solve the problem, how many push-ups did your team do. Let the students collaborate and grapple with the problem. The teacher will circulate around the room listening to the conversations going on. Questions that the teacher might ask:

* Can you tell me why you decided to do use this strategy?
* What does this represent?
* What is your next step?
* What if a team member did 13 more push-ups? How would you solve with this additional number?”
* Can your team use a different strategy to solve find the total?

Select student strategies that relate to your math goals/outcomes. Think about the order that makes sense for presentation.

**Discuss:**

Bring the class back together. Share selected student strategies. Have students make connections to the different strategies shared. Possible questions to ask:

* I’m interested in how you knew the total for your group. Can you explain?
* Is there another strategy we could use?
* How is your strategy similar to/different from \_\_\_\_’s strategy?
* How did place value help you in your strategy?

**Evaluation of Student Understanding**

Informal Evaluation: Observe and monitor students as they are solving the problem. How are they making sense of the problem? Are they using mathematical vocabulary as they solve and discuss the problem? How are students applying place value?

**Formal Evaluation/Exit Ticket**: Give the students a problem with 3 two-digit numbers to add. Ask them to solve the problem using a strategy and write how they solved the problem.

**Meeting the Needs of the Range of Learners**

**Intervention:** The manipulatives are provided for students that need to use concrete materials. The teacher observes students and asks questions to help move students along in the solving process. They are working in groups, so there is also peer communication and help.

**Extensions**

* After each group has shared their total number of push-ups, have the students determine the total number of push-ups the class completed.
* On a different day do the same lesson but have the students do sit-ups. Have them predict how many sit-ups the class will complete. Do they think the numbers will be similar or different from the number of push-ups they did on a previous day?

**Possible Misconceptions/Suggestions:**

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| **Possible Misconceptions** | **Suggestions** |
| Students don’t understand that if they have more than 9 tens, they will need to make a hundred.  | Have students use base ten blocks to represent the numbers. |

**Possible Solutions:** The solutions will be dependent on how many push-ups are performed, so answers among groups will vary.