Teaching Point:	Use base ten blocks to add 2-digit and 3-digit numbers and the algorithm (regrouping tens)
Big Idea:	Number sentences represent situations Using place value and knowledge of operations helps you add and subtract any numbers.
Standard	• Fluently add and subtract within 1000 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction
Materials Needed:	Slates to use as a writing surface PST packets Place to chart student work
Vocabulary:	Number sentences, Represent, equal, decompose, compose, subtraction, addition, place value, regroup, inverse, difference, constant difference, variables, **addend, algorithm**
Takeaway	We can use base ten blocks to show how to add values. We can show how to regroup using the algorithm.
Lesson Outline	Vocab review - 2 min PST - 5 min Discussion -5 min Direct instruction - 5 min Group work- 20 min Wrap up- 3 min Exit Ticket- 5 min

PST :

Ms. Yu likes to collect different coins from around the world. She collected 343 last year. This year she has collected 179. How many coins does she have in total? Write a number sentence and solve using **base ten blocks** and the **algorithm**.

What we want students to get from this problem (including consideration of how it connects to prior day and builds to next day): After using the standard algorithm with regrouping just the ones, students will now have the challenge of using the algorithm when there is regrouping in the ones and the tens. They should be able to do this with the base ten blocks and note their actions with the algorithm. They do not need to master how to do the standard algorithm without blocks, but they do need to be able to proficiently add any numbers within 999 using at least one strategy independently (without manipulatives).

Possible Strategies to Approach Problem:

- Direct Modeling
  - Base 10 blocks or snap cubes to count and to get the missing total (inverse relationship)
  - Drawing a picture of base 10 blocks and vertically aligning them
- Algorithm
  - Students attempt and successfully use the algorithm
  - Students know how to regroup using the algorithm
  - You can push students who you think are ready for this to try it after they have modeled with base ten blocks

Anticipated misconceptions:

- Students will not regroup or students will regroup the wrong amount
- Miscounting base 10 blocks
    - Some scholars might not regroup either
- Students will not line up the place values correctly when noting actions with the standard algorithm
- Students do not know how to regroup using the standard algorithm
- Students will start by adding the hundreds and then become confused when they need to regroup tens and ones.
- Wrong operation (work with scholar to fix this during problem solving task)

Flow of the lesson:

- *Quick Vocab (2 minutes)*
    - *Review vocabulary words/ phrases:* **place value.**
    - *Review vocabulary word* ***addend.*** *Addends are the values you add together in a problem or number sentence.*
    - *Review the* ***algorithm*** *briefly.*

- *Problem Solving Task (5 minutes):*
    - *Routine to reinforce:*
      PSTs are intended to be focused, independent work or in partnerships depending on the task. Teachers can use the discussion toolkit to plan for the discussion during this time and note misconceptions. Students should engage in the struggle and attempt to work for the whole time - rereading the problem or trying another model or strategy if they finish early. Teachers should only intervene if students have a misconception that needs to be addressed to access the problem (noted in the discussion planner).
    - *Habits to reinforce through narration and sharing student work:*
        - *Following the directions carefully*
        - *Showing work (labels, pictures, models, or using manipulatives)*
        - *Writing a solution sentence if appropriate*
        - *Rereading the problem or asking the teacher to re-read a problem if you are stuck/not sure what to do*
        - *Using the whole work time. Students should not be engaging in other tasks when they are done. They should*
        - *look over their work, reread the problem, and see what they can add.*

Note: Students should be able to get some of their thinking on paper, but if they are struggling, as you are circulating, try to ask students to orally tell you what they think so they can be prepared for the math discussion.

- Yesterday we started talking about the algorithm and how we can use it to show how we add by place value without base ten blocks.

- Today we are going to continue to learn about the algorithm and how we can show when we need to regroup using the algorithm.
  - The big question we are going to focus on today is: **How can we show what we did with base ten blocks using only numbers, specifically, how do we show when we regroup.**

- Hand out PSTs to students. For this PST, ensure that all students understand what is happening in the story before they go off to solve the problem. You can do this by reading it together and asking questions about what is happening in the story or having students show a thumbs up when they think they know how to solve the problem.
- **Today students can try to show the algorithm on their own during the PST.**
- Give students time to work on the PST on their own.
- During this time, walk around and observe students and take notes on the discussion planner to plan for your discussion.

Note: Students should be able to get some of their thinking on paper, but if they are having trouble, as you are circulating, try to ask students to orally tell you what they think so they can be prepared for the math discussion.

Discussion Planner: (Note-As you are circulating during the PST, take notes of students that you want to highlight in the discussion. Below is the order in which you could call students up to explain their thinking.)

STRATEGIES USED:

Direct Modeling ● **Base 10 blocks or snap cubes to add the addends together** ● **Drawing a picture of base 10 blocks to show how to add the parts together and show regrouping**	
Algorithm ● **Students attempt and successfully use the algorithm** ● **Students know how to regroup using the algorithm** ● **You can push students who you think are ready for this to try it after they have modeled with base ten blocks**	

MISCONCEPTIONS To Note:

Wrong operation (work with scholar to fix this during problem solving task) - not understanding the relationship between the numbers.	
Unorganized and messy work which results in counting errors	
Students will not line up the place values correctly when noting actions with the standard algorithm	
Students do not know how to regroup using the standard algorithm	
Students will start by adding the hundreds and then become confused when they need to regroup tens and ones.	

Discussion (5 Minutes):

- For this discussion, have a student share who was able to neatly organize their base ten chart to show how they added value together. Having a neat and organized chart is key to making the algorithm clear. Be sure that this student clearly models or circles how they show regrouping the ones.
- Then have a student share how they attempted the algorithm if anyone did so correctly.

Questions to push the discussion points: (these questions can be posed to all students who are sharing and students should be encouraged to turn and talk about the responses or in response to a student's explanation)-Be sure to chart strategies here or put up student work

- For direct modeling:
  - How did you organize your chart?
  - Did you need to regroup?
  - Where did you need to regroup? (ones and the tens place)
  - How did you show your regrouping?
- For the algorithm:
  - How did you set up the algorithm? (I lined up the place values)
  - What did you add first? (the ones place)
  - What did you notice? (I needed to regroup the ones because when I added 3 and 9 it made 12, so I regrouped 10 ones into the tens place by putting a 1 at the top of the tens place.)
  - How is this similar to the base ten chart? (the circled the ones to show that they were being regrouped into a ten)
  - What did you do next? (I added 4 tens, 7 tens and the 1 ten I regrouped from the ones place to get 12 tens. Then I noticed I needed to regroup the ten tens into 100 and put a 1 in the hundreds place to show that I needed to add the hundred I regrouped)
  - How is this similar to the base ten chart? (the circled tens show that they were being regrouped into a hundred.)
  - What did you do after that? (I added up all of the hundreds and had 3 hundreds, 1 hundred and 1 hundred from when I regrouped the ten to get 500)
  - What is the answer? (522)

If students are able to clearly show their regrouping in the PST with the algorithm, then have them lead the part above. If they need more guidance, you can model the algorithm, but be sure to ask them all the questions as you go. Have students model the algorithm on their slates or their PST if they didn't get it correct.

- **How are the algorithm and base ten strategies similar?**
- **When we are adding numbers, we can use the algorithm as a strategy to show when we regroup using the algorithm.**

Group work (20 minutes):

Have students get their pencils and packets and go back to the carpet. Have students work on the first problems independently and then come back as a group to discuss how they found their answers. **Encourage students to organize their workspace clearly. Every student should practice setting up the algorithm. Highlight places where students are showing regrouping with the algorithm. Make sure that**

students are starting in the ones place to ensure that they are aware of when they need to regroup in the tens and ones places.

For some of the practice problems, have students try the algorithm first and then check their work with base ten blocks.

Students who need more practice and support should stay on the carpet and work with you to explain their thinking. It could be good to re-ask some of the discussion questions during this time, and just tweak them to relate to the problem they are working on.

Wrap up (3 mins):
Ask scholars to turn and talk about what they learned today. Listen for students to mention that we learned that the algorithm is a strategy for addition that shows what you do with base ten blocks, but just with numbers.

Exit Ticket (5 min): The exit ticket should be done independently by students. This will help you know who may need a follow up conference based on this concept.

Note students below who you want to follow up with on this concept.

Scholar: _____ Date: _____

Problem Solving Task

Ms. Yu likes to collect different coins from around the world. She collected 343 last year. This year she has collected 179. How many coins does she have in total? Write a number sentence and solve using **base ten blocks** and the **algorithm**.

Base Ten Blocks	Algorithm

Discussion Problems

1. A hungry shark was stalking schools of fish. One school had 367 fish. The second school had 189 fish. How many fish were there in all? Write a number sentence and solve using base ten blocks and the algorithm.

Base Ten Blocks	Algorithm

2. Ms. Stacker made up a lot of dances. She created 369 dances in September and 34 dances in October. How many dances did she create? Write a number sentence and solve using base ten blocks and the algorithm.

Base Ten Blocks	Algorithm

Discussion Problems (continued)

Directions - Solve the following problems using base ten blocks and the algorithm.

287 + 214 = ?

Base Ten Blocks	Algorithm

365 + 279 = ?

Base Ten Blocks	Algorithm

Name: _____ Date: _____

Exit Ticket

In Antarctica last year, they had 257 inches of snowfall in January and 286 inches in February. How many inches of snowfall did they have in January and February? Write a number sentence and solve using **base ten blocks** and the **algorithm**.

Base Ten Blocks	Algorithm

Lifework/Review

Today's Math Takeaway!

We learned that we can use the algorithm to show how we add base ten blocks! We can show regrouping with the algorithm in both the ones place and the tens place.

Math Vocabulary: The **Algorithm** is a commonly used strategy to solve addition problems!

There were 265 dogs and 338 cats. How many animals are there altogether?

Base Ten Blocks	Algorithm

James said he solved 78-23 by using addition to get 55. Show or explain how James could use addition to solve 78-23.

Which of these is **not** a way to write 453?

a) 3 hundreds, 15 tens, 3 ones

b) 4 hundreds, 5 tens, 3 ones

c) 4 hundreds, 4 tens, 13 ones

d) 4 hundreds, 4 tens, 3 ones

Find the sum of 145 and 179.