Math Objective
Teaching Strategies GOLD Alignment:
20b Quantifies: (Green, Blue, Purple) Recognizes and names the number of items in a small set (up to five) instantly; combines and separates up to five objects and describes the parts. Makes sets of 6-10 objects and then describes the parts; “counts all” or “counts on” to find out how many. Uses a variety of strategies (counting objects or fingers, counting on, or counting back) to solve problems with more than 10 objects.

Math Talk - Child Vocabulary

<table>
<thead>
<tr>
<th>Math vocabulary</th>
<th>Age-appropriate definition</th>
<th>Hand motion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subtract</td>
<td>“Take Away”</td>
<td>[pull arm back towards you]</td>
</tr>
<tr>
<td>Zero</td>
<td>“Nothing”</td>
<td>[make “0” with hands]</td>
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</tbody>
</table>

**ASK: Open-Ended Questions**

- “What kind of rolls get you closer to becoming the Zero Hero? Why do you think that is?”
- “Could you become the Zero Hero with just 2 rolls? Why or why not?”
- “What is the most amount of rolls that it could take to get to zero? How do you know?”

**EXPLORE**
- Allow your child time to freely explore the materials provided for this game.
- Discuss the number 0. ZERO means nothing (or no items!)
- Find a container that is full (coin jar, fruit bowl, etc.). Take out each object as you count it. Once the container is empty, say there are ZERO objects left in the container.

**ASK:** “What do you think ZERO means?”

**PLAY**
- Explain to your child that each of you is in charge of cleaning up the litter in your park. The counters are the pieces of litter. The first player to have 0 pieces of litter is the Zero Hero!
- Player 1 rolls a die. Player 1 SUBTRACTS (takes away) that number of counters from their park game board.
- Player 2 rolls the die. Player two SUBTRACTS (takes away) that number of counters (pieces of litter) from their game board.

**ASK:** “Which one of us is closer to having zero counters left? How do you know?”

**BUILD**
- Try playing with the 20-dot game boards, using 20 counters for each player.
- Play with 2 dice. SUBTRACT (take away) the total number rolled. For example, if you roll a 3 and a 5, SUBTRACT 8 counters from your counter.

**ASK:** “What numbers could be rolled to make you the Zero Hero?”

**CONNECT**
- While on a walk or on the stairs, call out a number to your child.
- See if your child can take that number of steps. If you call out, “ZERO!” have your child practice not taking any steps.

**ASK:** “How do you know that you moved 3 steps? How do you know that you moved 6 steps?”

**Zero Hero Continued**

- Allow your child time to freely explore the materials provided for this game.
- Discuss the number 0. ZERO means nothing (or no items!)
- Find a container that is full (coin jar, fruit bowl, etc.). Take out each object as you count it. Once the container is empty, say there are ZERO objects left in the container.

**ASK:** “What do you think ZERO means?”

- Cut your park game board in half along the dotted line. Give each player a 10-dot park game board.
- Have each player place 1 counter on each dot on their park game board. Count as you do so.

- Player 2 rolls the die. Player two SUBTRACTS (takes away) that number of counters (pieces of litter) from their game board.

**ASK:** “Why do you think we placed one counter on each dot on our game boards?”

- Explain to your child that each of you is in charge of cleaning up the litter in your park. The counters are the pieces of litter. The first player to have 0 pieces of litter is the Zero Hero!
- Player 1 rolls a die. Player 1 SUBTRACTS (takes away) that number of counters from their park game board.

- Player 1 rolls a die. Player 1 SUBTRACTS (takes away) that number of counters from their park game board.

- The first player with 0 counters left is the Zero Hero! (The roll does not have to get you exactly to zero).

**ASK:** “Which one of us is closer to having zero counters left? How do you know?”

- Try playing with the 20-dot game boards, using 20 counters for each player.
- Play with 2 dice. SUBTRACT (take away) the total number rolled. For example, if you roll a 3 and a 5, SUBTRACT 8 counters from your card.

- Take turns rolling the die and taking away counters/litter.

- The first player with 0 counters left is the Zero Hero! (The roll does not have to get you exactly to zero).

**ASK:** “How far away from ZERO are you? How do you know?”

- Now pretend the counters are people playing in your park.
- Try playing where you start with ZERO counters and add the number rolled. After rolling the dice and adding counters ask, “How far away from ZERO are you?”

**ASK:** “How far away from ZERO are you? How do you know?”

- While on a walk or on the stairs, call out a number to your child.
- See if your child can take that number of steps. If you call out, “ZERO!” have your child practice not taking any steps.

**ASK:** “How do you know that you moved 3 steps? How do you know that you moved 6 steps?”

- Take turns being the one to call out the numbers.
- Discuss why you don’t take any steps when “ZERO” is called out.

**ASK:** “Why do you think we don’t take any steps when “ZERO” is called?”
...During Whole Group/Morning Meeting
» While taking attendance, have all students start by standing up. As you call students, ask them to sit down. Throughout attendance ask, “How many more students do I have to call until we have zero students standing? How do you know?”

...During meal time
» Ask students how many more of a food item they have remaining until they reach zero. For example, ask, “How many more crackers do you have to eat before there are zero left?”

...During Centers
» Provide students with a countdown until it is time to clean up. For example, when there are 5 minutes left in centers/free choice time, say, “We have 5 more minutes until we clean up. We are 5 minutes away from having zero minutes left in centers.” Towards the very end, try counting down the seconds with students. Start at 10 or 20 seconds and count down to 0.

Learning Trajectory for Adding and Subtracting

Pre +/-:
A child shows no sign of being able to add or subtract.

Nonverbal +/-:
A child can add and subtract very small collections nonverbally. When shown 2 red blocks that are then hidden under a napkin, then another red block is added to the collection under the napkin, a child is able to make a matching set of 3 red blocks.

Small Number +/-:
Next, a child is able to use objects to count all for problems up to 3 + 2. If you say, “You have 1 block and I have 2. How many blocks do we have in all?” then your child will count the objects, “1, 2, 3. We have 3 blocks!”

Find Result +/-:
Addition: A child can find sums for joining (you have 2 blocks and get 2 more, how many blocks do you have in all?) and part-part-whole problems (there are 3 red balls and 4 green balls, how many balls in all?) using direct modeling or counting all with objects.
Subtraction: A child can solve take away problems by separating with objects. “You have 5 blocks and give 2 to Sarah. How many do you have left?” The child counts 5 blocks, then takes away 2 and counts the remaining 3.

Find Change +/-:
Addition: A child can find the missing addend (4 + _ = 7) by adding on objects. When given 4 blocks and asked, “How many more do you need to have 7?” Child counts the 4 blocks and then continues to count until they have 7 blocks. Then the child recounts the new blocks to find out that they needed 3 more to have 7 blocks.
Subtraction: Compares by matching in simple situations. When there are 6 students and 4 blocks and you ask, “If we give 1 block to each student, how many students won’t get a block?” Child counts out 6 students and then matches 4 blocks to 4 of them, then counts the 2 students that have no block.

Make It N +/-:
A child is able to count on. For example, when told, “we have 4 plates, but need 6,” the child is able to put up 4 fingers and count up from 4 to say, “5, 6,” and then count the new fingers to say, “we need 2 more plates.”

Find It N +/-:
A child is able to count on and can use objects to find missing addends and subtractions.


CONNECT to the Child and Home

• Send home a page from this month’s calendar to families. Ask families to create a countdown to a special day or event using their calendar.
  » For example, families may countdown how many days until a birthday or holiday.
  » Every day, have families “count down” one day. Have families ask their child, “How many more days until we get to our special event?”