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| **NC.3.MD.3**  **Box Tops Collection** | |
| **Domain** | Measurement and Data |
| **Cluster** | Represent and interpret data. |
| **Standard(s)** | **NC.3.MD.3**  Represent and interpret scaled picture and bar graphs:   * Collect data by asking a question that yields data in up to four categories. * Make a representation of data and interpret data in a frequency table, scaled picture graph, and/or scaled bar graph with axes provided. * Solve one and two-step “how many more” and “how many less” problems using information from these graphs |
| **Materials** | Box Top Collection student activity page, pencil |
| **Task** | Distribute the Box Tops Collection student activity page. Read the directions and problem to the students and ensure that students have a plan for beginning to work.  The students at Green Elementary are collecting Box Tops to earn money for their school. The graph below shows the number of Box Tops collected by the students at each grade level.Use the graph to answer the questions below. Show your thinking with pictures, words or numbers.   1. Who collected fewer Box Tops, the 1st grade students or the 2nd grade students? \_\_\_\_\_\_\_\_\_\_\_\_\_ How many fewer? \_\_\_\_\_\_\_\_ 2. How many more Box Tops did the 3rd graders collect than the 2nd and 4th graders combined? |

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| **Rubric (include a statement of purpose of rubric--for teacher decision making rather than evaluation)** | | |
| **Level I**  Not Yet | **Level II**  Progressing | **Level III**  Meets Expectation |
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| * The student incorrectly reads data from the graph,   AND   * The student is unable to make sense of the problem or answer questions independently. | * The student correctly reads data from the graph to say that the 2nd grade students collected less Box Tops than the 1st grade students, but is unable to identify how many fewer or (has the correct answer with no explanation).   AND   * The student is able to correctly add to figure out that 2nd and 4th grades collected a total of 100 Box Tops, but does not correctly identify that this is 20 less than the Box Tops collected by 3rd grade. | * The student correctly reads data from the graph and answers questions correctly (2nd grade collected 40 less; 3rd grade collected 20 more Box Tops than 2nd and 4th grades).   AND   * The student shows his/her thinking with pictures, words or numbers to model how he/she solved the problem. |

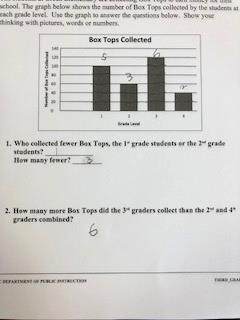
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| **Standards for Mathematical Practice** |
| **1. Makes sense and perseveres in solving problems.** |
| **2. Reasons abstractly and quantitatively.** |
| 3. Constructs viable arguments and critiques the reasoning of others. |
| **4. Models with mathematics.** |
| 5. Uses appropriate tools strategically. |
| **6. Attends to precision.** |
| 7. Looks for and makes use of structure. |
| 8. Looks for and expresses regularity in repeated reasoning. |

The students at Green Elementary are collecting Box Tops to earn money for their school. The graph below shows the number of Box Tops collected by the students at each grade level. Use the graph to answer the questions below.

1. Who collected fewer Box Tops, the 1st grade students or the 2nd grade students? \_\_\_\_\_\_ How many fewer? \_\_\_\_\_\_\_ Show your thinking with pictures, words or numbers.
2. How many more Box Tops did the 3rd graders collect than the 2nd and 4th graders combined? Show your thinking below. Show your thinking with pictures, words or numbers.

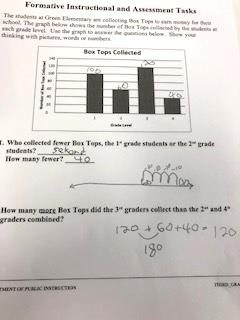
**Scoring Examples**

**Not Yet:** This student is unable to accurately read data from the graph. He assumes that the scale was 1, as indicated by the numbers he wrote above each bar on the graph. He answers that the 1st grade collected 3 fewer Box Tops than the 2nd grade. When asked to point to the bar that represented the number of Box Tops collected by 1st grade and 2nd grade, he was able to do that. When asked to identify which number was fewer, 100 or 60, he could do that, but still said that the first graders collected fewer box tops when he looked at the graph.



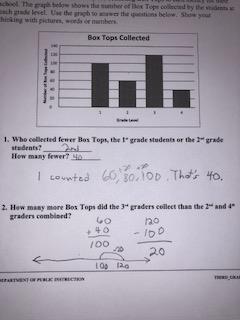
**Next steps for this student:** Instruct student on how to read scaled bar graphs, and how to determine how many more by comparing the top of the bar to the scale. Consider asking student to determine the number of Box Tops collected at each grade level before answering questions. Does the student understand the terms “fewer” “more” and “less?” Give her an example problem with smaller numbers: “I have 2 pencils. You have 5 pencils. Who has fewer pencils? How many fewer pencils do I have? If we combine our pencils, how many pencils do we have?” Then transition to questions about the graph: “How many box tops did the 1st grade collect? How many do you think the 2nd grade collected? Which is more? How can we find out how many more?”

**Progressing:** This student received a Level II (Progressing) because she correctly indicated the correct number of Box Tops collected by each grade in her problems, but incorrectly answered the second, two-step question. The student added the Box Tops from all three grade levels to incorrectly answer the second question. She also underlined the word “more” in the word problem and said she added because, “it says more.”



**Next steps for this student:** Does the student understand the terms “fewer” and “how many more?” Give her an example problem with smaller numbers: “I have 2 pencils. You have 5 pencils. Who has fewer pencils? How many fewer pencils do I have? If we combine our pencils, how many pencils do we have? If Mrs. Smith has 12 pencils, how many more pencils does she have than you and I do?” So now, let’s look back at the problem. How many Box Tops did the \_\_ grade collect? How many cans did the \_\_ grade collect? Can you show me how many more Box Tops the \_\_ grade collected than the \_\_ grade? Help the student recognize that in two-step questions, there are two separate operations. Have student restate the question in her own words, specifying what it is asking and what she needs to do to compute to promote reasoning through the problem instead of trying to use key words.

**Meets Expectations:** This student received a Level III (Meets Expectations) because she correctly answered both questions and clearly shows the strategies used to answer each question. While this student answered all of the questions correctly, the task does not fully assess the entire standard because students are not actually collecting and creating the graph. The focus of this task is to answer two-step “how many more/how many fewer” questions based on the given graph.



Next steps for this student: Consider pushing thinking by asking her to use the graph to find the total number of Box Tops collected and/or if she can rank the grade levels from most to least number of Box Tops collected.