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| **NC.4.MD.4****How High Did it Bounce?**  |
| **Domain** | Measurement and Data |
| **Cluster** | **Represent and interpret data.** |
| **Standard(s)** | **NC.4.MD.4** Represent and interpret data using whole numbers. * Collect data by asking a question that yields numerical data.
* Make a representation of data and interpret data in a frequency table, scaled bar graph, and/or line plot.
* Determine whether a survey question will yield categorical or numerical data.
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| **Materials** | paper, pencil, activity sheet |
| **Task** | **How High Did it Bounce?**A class bounced a ball 18 times and recorded the data in a table. Make a line plot to display the data.

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| Height in Meters |
| 3 | 5 | 1 | 6 | 5 | 6 |
| 6 | 5 | 4 | 4 | 2 | 6 |
| 5 | 1 | 5 | 6 | 4 | 5 |

1. How many balls bounced 3 meters or higher? (15)
2. How many balls bounced fewer than 3 meters? (3)
3. Based on the data, if we bounced the ball another time, what is the height likely to be? Why? (5 or 6 because in the 18 times we have bounced the ball, it has bounced to 5-6 meters more often than any other distance.)
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| **Rubric** |
| **Level I****Not Yet** | 1. **Level II**
2. **Progressing**
 | **Level III****Meets Expectation** |
| Student work exhibits **0-1** of the following characteristics:* Correct number of data points on the line plot
* The X’s are drawn approximately at the same size
* Consistent value of the X’s in the line plot
* Appropriately spaced numbers on the line plot
* Analyzed data is correct
 | Student work exhibits **2-3** of the following characteristics:* Correct number of data points on the line plot
* The X’s are drawn approximately at the same size
* Consistent value of the X’s in the line plot
* Appropriately spaced numbers on the line plot
* Analyzed data is correct
 | Student work exhibits **4-5** of the following characteristics:* Correct number of data points on the line plot
* The X’s are drawn approximately at the same size
* Consistent value of the X’s in the line plot
* Appropriately spaced numbers on the line plot
* Analyzed data is correct
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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. |

**How High Did it Bounce?**

A class bounced a ball 18 times and recorded the data in a table.

Make a line plot to display the data.

|  |
| --- |
| Height in Meters |
| 3 | 5 | 1 | 6 | 5 | 6 |
| 6 | 5 | 4 | 4 | 2 | 6 |
| 5 | 1 | 5 | 6 | 4 | 5 |

 **0 1 2 3 4 5 6 7**

A) How many balls bounced 3 meters or higher?

B) How many balls bounced fewer than 3 meters?

C) Based on the data, if we bounced the ball another time, what is the height likely to be? Why?

**Scoring Examples**

**Not Yet:** The data are incorrectly plotted. The Xs are not consistent or the same size. Calculations and analysis are incorrect and not reasonable.



**Progressing:** The data are plotted correctly on the line plot, but the student incorrectly analyzed the data.



**Meets Expectation:** Data points are plotted correctly. The Xs are consistent and the same size. Analysis of the data is correct and an explanation was offered for Part C.

