

CCSS Math Practices Alignment Sample

Activity: “Boxplots and Histograms” for the TI-84 Plus Family

Note: This alignment sample is intended to highlight opportunities to use TI Technology to help facilitate students' participation in the CCSS Standards for Mathematical Practice. The prompts and examples provided here are from the Teacher and Student activity documents and demonstrate how the activity can be used to engage students in the Practices. It is possible the activity can be used to engage students in the other Math Practices that are not specified here.

2. Reason abstractly and quantitatively.

Students should:

- Understand and explain the meaning of quantities and relationships in the problem.
- Be able to represent a problem using words, numerical expressions or equations, graphs and diagrams.
- Consider the units involved in the problem and use appropriate conversions, as needed.

TI-84 Plus Technology and Teaching Tips:

- Graph the boxplot for this data and use the results from question 2 to discuss the shape of the boxplot. Why is the first whisker so short? What does it mean for the other whisker to be so long?
- Have students discuss other situations in which it might be better to use a boxplot versus a histogram to model the data.

5. Use appropriate tools strategically.

Students should:

- Consider the benefits and limitations of the available tools to decide which are appropriate for solving a given problem.
- Understand how technology can help visualize and explore results, find patterns and compare relationships.
- Use technology to model problems and to analyze and justify their results.
- Use technology to deepen their understanding of concepts.

TI-84 Plus Technology and Teaching Tips:

- Discuss what is needed to solve a problem involving data and then determine which tools might be appropriate for solving it.
- Discuss with your students what an appropriate window for the boxplot might be.

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6. Attend to precision.

Students should:

- Use clear definitions and precise mathematical language when justifying their conclusions.
- Use correct symbols in expressions, label graphs accurately, specify correct units and appropriately use estimation to solve problems.
- Express numerical answers with the appropriate degree of precision.

TI-84 Plus Technology and Teaching Tips:

- Have students use the results from questions 3 and 4 to discuss where the mean and median are located on the graph. What do the mean and median values say about the distances traveled?
- The interval from 40 to 60 should contain the median of 51, but it does not. Ask students to explain this using appropriate terminology and evidence from their graphs and data to explain their reasoning.

7. Look for and make use of structure.

Students should:

- See the “big picture” in a problem and look for patterns in intermediary results.
- Identify patterns and use previous knowledge to leverage those relationships to solve problems.

TI-84 Plus Technology and Teaching Tips:

- Discuss how the shape of the histogram compares to the shape of the boxplot. In which situations might it be better to use a boxplot versus a histogram?
- How does the tallness of the first bar in the histogram relate to the shortness of the first whisker in the boxplot?
- Display both the boxplot and the histogram on the same screen. Ask the students to use the histogram to explain why one whisker on the boxplot is so long.