



PERFORMANCE TASK: Batter Up!

Adapted from Florida

STANDARDS FOR MATHEMATICAL CONTENT

MCC5.NBT.3 Read, write, and compare decimals to thousandths.

- a. Read and write decimals to thousandths using base ten numerals, number names, and expanded form, e.g., $347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (1/10) + 9 \times (1/100) + 2 \times (1/1000)$.
- b. Compare two decimals to thousandths based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons.

MCC5.NBT.4 Use place value understanding to round decimals to any place. Perform operations with multi-digit whole numbers and with decimals to hundredths.

STANDARDS FOR MATHEMATICAL PRACTICE

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

BACKGROUND KNOWLEDGE

Students should be familiar with constructing bar graphs from raw data. They may need to review the vocabulary associated with graphs.

ESSENTIAL QUESTIONS

- How do we compare decimals?
- How are decimals used in batting averages?

MATERIALS

- “Batter Up!” Recording Sheet
- Centimeter graph paper
- crayons, colored pencils, or markers

GROUPING

Individual/Partner Task

TASK DESCRIPTION, DEVELOPMENT, AND DISCUSSION

In this task students will construct a bar graph showing the batting averages of National League batting champions and answer questions about the data. They will order, compare, and round the decimals in the problem.

Comments

This task can be introduced with an explanation of batting averages and how they are computed (# of hits per 1,000 at-bats). They can construct the graph using graph paper with each square representing a portion of the decimal number. Students should be allowed to experiment and decide the appropriate interval.

Task Directions

Students will follow the directions below from “Batter Up!” student recording sheet.

Using the data in the table, construct a bar graph showing the batting averages of these National League batting champions. You will need graph paper and markers, colored pencils, or crayons. Using the data and the graph, answer the questions on the recording sheet. Then students will follow the directions below from the “Batter Up!” student recording sheet.

FORMATIVE ASSESSMENT QUESTIONS

- How will you choose a scale for the graph? Is your scale reasonable?
- How will you show what each bar represents?
- How does rounding to hundredths affect the averages?

DIFFERENTIATION

Extension

- Explain why rounding batting averages would not be a good idea for the players.
- What might happen if a player missed half of the season with an injury? How would it affect his batting average?

Intervention

- Allow students to work with a partner.
- Allow students to use a calculator.

| Baseball Statistics | | |
|----------------------------|-----------------|------------------------|
| Year | Player | Batting Average |
| 1988 | Tony Gwynn | .313 |
| 1989 | Tony Gwynn | .336 |
| 1990 | Willie McGee | .335 |
| 1991 | Terry Pendleton | .319 |
| 1992 | Gary Sheffield | .330 |

Batter Up!



3. How much better is the batting average of the player with the highest average than that of the player with the lowest average? How do you know?
4. If rounded to the nearest hundredth, which players will have the same average?
5. Write two generalizations you can make, based on the data.