Eureka Math Module 2 (3rd Grade)

Rounding to the Nearest Ten: A Study Guide

Key Concepts

- **Number Sense:** Understanding the value and relationships between numbers.
- **Vertical Number Line:** A visual tool that helps students visualize the relative position of numbers and their proximity to benchmark numbers.
- **Rounding:** Approximating a number to a specific place value (in this case, the nearest ten).
- **Interval of Tens:** The range between two consecutive multiples of ten (e.g., 40-50, 170-180).

Quiz

Instructions: Answer the following questions in 2-3 sentences.

1. Why is using a vertical number line beneficial for teaching rounding?
2. Explain how to determine the interval of tens a given number falls between.
3. When rounding using a vertical number line, how do you determine whether to round up or down?
4. If a number falls exactly in the middle of the interval of tens (e.g., 45), what is the standard practice for rounding?
5. How does the concept of "zooming in" apply to using the vertical number line for rounding?
6. What does the squiggly equal sign (≈) represent in the context of rounding?
7. Round the number 128 to the nearest ten using a vertical number line. Explain your reasoning.

8. Round the number 355 to the nearest ten using a vertical number line. Explain your reasoning.
9. A bag of flour weighs 537 grams. Round this weight to the nearest ten using a vertical number line.
10. How does building number sense through the vertical number line help students understand the traditional rounding rules?

Answer Key

1. The vertical number line helps students visualize the relative position of a number within an interval of tens, fostering number sense and understanding of proximity to benchmark numbers. This visual representation makes the concept of rounding more intuitive than simply applying a rule.
2. Identify the multiples of ten that the given number falls between. For example, the number 128 falls between 120 and 130.
3. If the number falls in the upper half of the interval on the vertical number line, round up to the higher multiple of ten. If it falls in the lower half, round down to the lower multiple of ten.
4. The standard practice is to round up to the next higher multiple of ten. For example, 45 would be rounded up to 50.
5. "Zooming in" refers to focusing on the specific interval of tens where the number lies on the larger vertical number line. This allows for a clearer visualization of the number's position relative to the nearest tens.
6. The squiggly equal sign (≈) indicates an approximation. In rounding, it means that the rounded number is not the exact value but a close approximation.
7. On the vertical number line, 128 falls between 120 and 130. Since it's closer to 130, it rounds up to 130.
8. On the vertical number line, 355 falls between 350 and 360. Since it's closer to 360, it rounds up to 360.
9. On the vertical number line, 537 falls between 530 and 540. Since it's closer to 540, the weight rounded to the nearest ten is 540 grams.

10. By visualizing the position of numbers on the vertical number line, students develop an understanding of the relative magnitudes of numbers and their distances from benchmark numbers. This understanding lays a foundation for comprehending and applying traditional rounding rules, as they can see the logic behind the rules rather than just memorizing them.

Essay Questions

1. Compare and contrast the benefits and drawbacks of using a vertical number line versus the traditional rounding rules when teaching rounding to third-grade students.
2. Explain how a teacher could effectively incorporate a vertical number line activity into a lesson on rounding to the nearest ten. Describe the materials, steps, and potential student responses.
3. Discuss the role of number sense in rounding and explain how the vertical number line helps develop this understanding in students.
4. How might the use of the vertical number line for rounding be extended to teaching rounding to the nearest hundred or thousand? Describe the adaptations and considerations for teaching these concepts.
5. Analyze the potential challenges students might face when learning to round using a vertical number line and propose strategies teachers can employ to address these difficulties.

Glossary

- **Benchmark Numbers:** Numbers that are easily recognizable and serve as reference points for understanding other numbers (e.g., multiples of 10).
- **Estimate:** A rough calculation or approximation of a value.
- **Multiple:** The product of a given number and any other whole number.
- **Place Value:** The value of a digit based on its position in a number.
- **Round:** To approximate a number to a specific place value, making it simpler to work with.