



About How Much? - Grade Three

Ohio Standards Connection

Number, Number Sense and Operations

Benchmark J

Estimate the results of whole number computations using a variety of strategies, and judge the reasonableness.

Indicator 15

Evaluate the reasonableness of computations based upon operations and the numbers involved; e.g., considering relative size, place value and estimates.

Mathematical Processes

Benchmark G

Use reasoning skills to determine and explain the reasonableness of a solution with respect to the problem situation.

Lesson Summary:

In this lesson, students use estimation to determine the reasonableness of answers to math problems. Front-end estimation, a second-grade skill in the Academic Content Standards, is pre-assessed. Students investigate other estimation strategies and use these strategies to judge the reasonableness of answers.

Estimated Duration: Two 30 to 40 minute sessions

Commentary:

Success in using estimation requires students to realize that the “appropriateness of an estimate is related to the problem and its context” (NRC, 2001). In traditional instruction, the emphasis is often solely on exact answers. When students begin using estimation strategies, they often find the exact answer first and then round the answer because they fear being wrong if the exact answer is not evident (NRC, 2001). Estimation is often taught as algorithms to be followed in an exact way, increasing students reliance on exact answers. Instead, instruction on estimation should stress the inexact nature of estimation, and encourage students to make use various strategies in different situations.

Pre-Assessment:

- Use About How Many?, Attachment A (An adapted version of an anticipation guide.)
- Evaluate reasonable estimates of answers using front-end estimation by circling the estimated sum or difference listed to the left or right of the simple computation problem in the center column.
- Complete the estimation activity in small groups.
- Discuss and justify outcomes of small group decisions with the whole group.
- Record answers from class on the board or chart paper and leave up so that any incorrect answers can be corrected during the lesson.

Scoring Guidelines:

The skill of using front-end estimation to determine the reasonableness of answers to addition and subtraction problems is an indicator in grade two. Listen for explanations that indicate students remember how to do front end estimation correctly. Also listen for explanations indicating students know how to select between the two choices given on the worksheet.