Using Guess, Check and Revise

Subject: Math
Grade Level: 3rd – 5th
Summary: Students will answer coin related math questions using the guess, check and revise process for problem solving.

BIG QUESTION

How can we use different strategies to solve the same problem?

TIMING

0 to 45 minutes

LEARNING OBJECTIVES

- Students will determine the information they need to solve a problem.
- Students will use the guess and check method to solve their problem.
- Students will test their answer using this method with real coins.

MATERIALS

- Math journals
- Circulating coins, plastic coins, or paper coin cut-outs
- Websites with math problem solving strategies or strategies from within curriculum

PROCEDURE

1. Explain to the students that there are many different strategies for solving math problems. It is important to know the strategies, and also to know when to use which strategy. Tell them that they will be using the Guess, Check and Revise method.
2. As a class, discuss how many different combinations of circulating coins (nickels, dimes and quarters) can be used to add up to 50 cents. You must use at least one of each coin. Have the students make a guess and write several guesses on the board.

3. Write out the specifics of the problem: To make 50 cents using only nickels, dimes and quarters, at least one of each coin.
4. Work with your students to develop a chart with the possible solutions. There will only be two solutions for this problem (1 quarter 2 dimes and a nickel; 1 quarter, 1dime and 3 nickels). Students can then revise their answer based on the chart.
5. Now give the students a problem to solve on their own using the same method you did as a class. Have them record the steps in their math journal. For example: How many different combinations of nickels, dimes and quarters can make $2.25 when you must use 17 coins.

ASSESSMENT

Evaluate the students' written steps for solving the problem, which should include the problem, the conditions, their guess, their chart or illustration for checking, and their revised answer.

DIFFERENTIATE

- Allow extended time.
- Advanced students could try multiple other strategies across different problems.

STANDARDS

Common Core Standards

Solve problems involving measurement and conversion of measurements.

CCSS.Math.Content.4.MD.A.1
Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. *For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ...*

CCSS.Math.Content.4.MD.A.2
Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.

CCSS.Math.Content.4.MD.A.3
Apply the area and perimeter formulas for rectangles in real world and mathematical problems. *For*

example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.