

Piggy Bank

I have 47 cents in my piggy bank. There are only 11 coins.
Show what the coins might be.

Grade Levels Pre-K-2

Piggy Bank

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Context

Earlier, *Exemplars* featured a money problem that also had two constraints, the number of pennies, nickels, dimes and quarters that you could use and the amount of money you had to find. This money problem also has two constraints, the number of total coins that can be used, and the amount to find. This month's constraints are more rigid and therefore may make the task more difficult for more students. Since there are fewer solutions, finding multiple solutions may be more challenging.

What This Task Accomplishes

The constraint on this task, limiting the total number of coins, needs to be thought of simultaneously with adding the value of the coins. Checking for two variables is a challenging problem-solving skill.

What the Student Will Do

The student will work with finding combinations of coins that add up to 47 cents and then check (or fail to check) for 11 coins.

Time Required for Task

30 minutes

Interdisciplinary Links

This task can be combined with a unit on money.

Teaching Tips

This activity is can be done with coins available.

Suggested Materials

Coins

Possible Solutions

Piggy Bank

Exemplars

1 quarter, 3 nickels, 7 pennies

4 dimes, 7 pennies

9 nickels, 2 pennies

Benchmark Descriptors

Novice

This student does not understand that not only do the coins have to add to 47 cents, but that you have to use 11 coins. There is no evidence of a strategy or reasoning. There is no explanation of the solution.

Apprentice

There is evidence that this student understands that the number of coins as well as the sum of the coins is important. S/he adds the coins and each sum is 47 cents. But the student has not rejected the solutions that had fewer or more coins than allowed. There is some evidence of reasoning or decision making (the equation adding the coins and the coins that are crossed out). Their strategy is partially useful, however, now they have to reject the solutions that do not work entirely. The explanation is incomplete, although there is some use of mathematical language (equations and naming of coins).

Practitioner

The solution shows the student understands that the coins add to 47 cents and only 11 coins are allowed. S/he uses a strategy that leads to a solution of the problem, using effective reasoning (crossing out the solution that does not work). There is a clear explanation using appropriate mathematical language; i.e., using the names of coins, the cents sign and equations are presented.

Expert

Multiple solutions show the student has a deep understanding of the problem. The student uses appropriate mathematical language (names of coins as well as equations and use of cents sign). The student verified the sums of coins as well as the number of coins used.