

How many Coins?

Objectives

Students will be able to solve simple and complex problems through systems of equations. Students will use a variety of strategies including: solve by graphing, solve by substitution, solve by elimination, or create a table.

Common Core State Standards: **A-CED.2, A-CED.A.3, A-REI.B.3 and A-REI.C.5, A-REI.C.6, A-REI.C.12**

Warm-up 10 minutes: 4 cards and a Magic Number

Using a doc cam, students will flip over four cards in a deck in a row and then put a fifth card below the four cards. This fifth card will become the magic number that students want to reach. They can use any operation and all four cards to come to the fifth number.

Give the students five minutes to work on solutions. Then have the students represent their answers on the board and discuss the different ways to come up with that number.

Inquiry Problem

In my jar, I have a mix of coins. (Jingling the coins for excitement). By the end of today, I would like for you to tell me what coins are in the jar and how many of each there are. Ok, I will now give you a few moments to think about what questions you would like to ask in order to solve this puzzle.

*Students will be given a chance to think about important questions to ask. They will then discuss these questions in their group and see if they agree on the important questions. Then we will discuss these questions as a class.

*Questions students may ask: **What kinds of coins are in the jar? How much is each coin worth? How much do the coins weigh? How many coins are there total in the jar? How much money is in the jar?**

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The jar will contain a mixture of pennies and nickels. There will 1,140 coins in the jar. The total value will be \$17.00. One coin is worth 1 cent and the other coin is worth 5 cents.

Group Work- 25 Minutes

Once the students have asked the questions and had their questions answered, I will allow time for students to work in groups to solve the problem. Students will be given a large piece of butcher paper to work on in their group. This will be hung up at the end of the conclusion of the task.

I will remind students of the importance of valuing each others ideas, drawing pictures, creating tables, and finding creative ways to represent the task I will also encourage students to find multiple ways to solve their problem. Most importantly, I will remind the students that mistakes grow the brain and by working through this task, we can learn a great deal from each other.

While students are working through the problem, I will circle the room and help give them guidance as they ask questions.

Class Discussion: 10-15 minutes

What methods did the groups use? Why?

I will give each group a chance to share their work and discuss how they came to the solution. The students will also be given a chance to ask questions. This will help students learn to convince their classmates of their thinking.

Closure/Reflection: 5 minutes

Have the students take time to reflect on the lesson. They will answer the following questions in the form of an exit ticket.

1. What went well?
2. What questions do you still have?
3. What made you excited?
4. Why is it important to show multiple ways of solving?
5. Any other ideas or thoughts you would like to share with me?