

**ELED 433 Math Methods**  
**Math Lesson Plan**

**TITLE/TYPE OF LESSON** The Penny Pot

**CONTEXT OF LESSON** Students should have knowledge about the value of pennies, nickels, dimes and quarters, and should be able to count smaller amount of change. Over the past week, students will have reviewed the value of these coins with their teacher and should be ready to make small amounts of change on their own or with some guidance.

**CONCEPTS TO BE COVERED** Students should understand how to count coins, totaling \$2.00 or less, using different combinations of coins for the same values. Students will also understand that less is more, in that the less coins used in representing a value, the easier it is to count the coins.

**RELATED VIRGINIA STANDARDS OF LEARNING**

- 2.10 The student will
- a) count and compare a collection of pennies, nickels, dimes, and quarters whose total value is \$2.00 or less; and
  - b) correctly use the cent symbol (¢), dollar symbol (\$), and decimal point (.

**LESSON OBJECTIVES**

- 1. The students will count and compare a collection of pennies, nickels, dimes and quarters whose total value is \$2.00 or less.
- 2. The students will represent a given value using two different representations.

**ASSESSMENT OF LEARNING**

- 1. To assess objective 1, I have created a worksheet in which students will have to fill out the answers as they count and compare coins while we are reading “The Penny Pot”. At the end of the book, students will be asked to use whatever strategy works best for them to figure out if Jessie has enough money to get her face painted. They will have to show their work on the worksheet provided.
- 2. To assess objective 2, I have created questions on the worksheet in which students must illustrate how they represented a value using coins in 2 different ways.

**MATERIALS NEEDED**

For each student:

- A cup of quarters, dimes, nickels and pennies
- Pencils
- Copies of the problems (attached)
- Hundreds chart (on students nametags)
- The Penny Pot
- Copies of challenge and remedial problems

ANTICIPATION OF STUDENTS’ MATHEMATICAL RESPONSES TO THE TASK(S) POSED ARE EMBEDDED IN THE PROCEDURES.

**PROCEDURES**

BEFORE	Anticipated student responses
These students should have knowledge of each	

<p>of the different coins (penny, nickel, dime, and quarter). We will review each coin and go over each coin's worth.</p> <p>I will display each coin on the doc cam.</p> <p>Show me a penny. How much is a penny worth? Can you show me 5¢? Show me another way you can make 5¢.</p> <p>Show me 10¢. Can you show me another way to make 10 ¢?</p> <p>Show me 25¢. Can you show me another way to make 25¢? Is there another way you could make 25¢?</p> <p>As you can see, we can make different amounts of money in multiple ways, but why would we want to use the fewest number of coins?</p>	<p><u>Student 1</u>: I made 5¢ with 5 pennies.  <u>Teacher</u>: Did anyone make 5¢ any differently?  <u>Student 2</u>: I made 5 ¢ with a nickel.  <u>Teacher</u>: How did you know that you could do that?  <u>Student 2</u>: Because 5 pennies are the same as 1 nickel.</p> <p><u>Student 1</u>: I made 10¢ with 2 nickels.  <u>Teacher</u>: How did you know that 2 nickels made 10¢?  Student 1: Because 5¢ and 5¢ is 10¢.  Teacher: Did anyone do anything differently?  <u>Student 2</u>: I made 10¢ with a dime.  <u>Teacher</u>: How did you know that you could do that?  <u>Student 2</u>: I knew that a dime equaled 10¢.  <u>Teacher</u>: Are there any other possibilities?  <u>Student 3</u>: You could make 10¢ with 10 pennies.</p> <p><u>Student 1</u>: I made 25¢ with 5 nickels.  <u>Teacher</u>: Can you show me how you figured out that 5 nickels equals 25¢?  <u>Student 1</u>: The first nickel is 5¢. Then 5 more is 10¢. Plus 5 is 15¢. 5 more is 20¢. And 5 more is 25¢. That is 5 nickels.  <u>Teacher</u>: Are there any other ways to make 25¢?  <u>Student 2</u>: I used a quarter because I knew that a quarter equals 25¢.  <u>Teacher</u>: Did anyone do anything differently?  <u>Student 3</u>: I used 3 dimes.  <u>Teacher</u>: Can you show me how you figured that out?  <u>Student 3</u>: 1 dime is 10¢, another dime is 10 more, so that is 20¢. Another dime is 10 more. Oops, that is 30¢. So instead, I need 2 dimes and a nickel, because the nickel will be the last 5¢.  <u>Teacher</u>: Is that all of the ways we can make 25¢?  <u>Student 4</u>: You can also count 25 pennies!</p> <p><u>Student 1</u>: Because it is easier to count when you have fewer coins.  <u>Teacher</u>: How come it is easier to count?  <u>Student 1</u>: Because you have less coins to count and you can start counting from a higher value or a higher coin, and add on the smaller values or smaller coins from there.</p>
<p>DURING</p>	
<p>Present the book that we will read:</p>	

We are going to continue to practice counting change. Has anyone ever read a book called "The Penny Pot"? While we read this book, we are going to follow and practice making different amounts of money.

*Students will fill out a worksheet as we go through the book together. A lot of the questions I ask will guide them to work through the problems on the worksheet.*

Page 7:

*Show the picture in the book. Can you show the same amount?*

--three dimes, one nickel, and four pennies? ---

-How much money does Jackie have?

**-Can anyone show me 39¢ using different coins, and the fewest number of coins?**

-Does she have enough money to get her face painted?

-If Jessie gets one more penny can you show me how much she would have?

-Can you show me how much she needs to have 45¢?

*I will demonstrate how to illustrate the different coins on paper and how to fill in the chart that the students have been given.*

Page 11:

*Show the picture in the book. Can you show me a quarter, a nickel, two dimes, and three pennies?*

-How much money does Miguel have?

-Can anyone show me 53¢ using different and the fewest amount of coins?

Does he have enough money to get his face painted?

Will he have any money left over if he gets his face painted?

So how much money can Miguel put into the penny pot?

Page 15:

Student 1: I used the least amount of coins to make 39¢ with one quarter, one dime and 4 pennies.

Teacher: How do you know that that is the least amount of coins?

Student 1: I started with the highest number coins and went from there. I used 1 quarter because 2 quarters would be too many. Then I went to dimes because that was the second greatest coin. I used 1 dime, and then I went to pennies, because even though nickels are greater than pennies, I would have more than 39¢ if I used a nickel.

Student 1: Jackie has 39¢. She doesn't have enough to get her face painted. If she had 1 more penny, she would have 40¢. She would need 6 more pennies to have 45¢.

Teacher: How did you know this?

Student 1: I made 39¢ and then I kept adding pennies until I got to 45¢. It took 6 pennies until I got to 45¢.

Teacher: Did anyone else use any other strategies to figure this out?

Student 2: I just knew that it would take 6 more cents for Jackie to have 45¢ because from 40¢ to 45¢, it is 5, and then from 39¢ to 40¢, it is just 1 more. 1 more than 5 is 6. I did it in my head.

Student 1: Miguel has 53¢. I used the least amount of coins to make 53¢ with 2 quarters and 3 pennies.

Student 2: He does have enough to get his face painted.

Teacher: How do you know?

Student 2: because it costs 50¢ and he has more than that.

Teacher: Will he have any money left over?

Student 2: Yes, 3¢ to put into the penny pot.

- Can you show me a quarter, a dime, two nickels, and seven pennies?
- How much money did Rachel have?
- Can anyone show me 52¢ using different and the fewest amount of coins?
- Does she have enough money to get her face painted?
- Will she have any money left over if she gets her face painted?
- So how much money can Rachel put into the penny pot?

Page 19:

- Jonathan had 54¢. Can you all show me 54¢ with your coins?
- How did you make 54¢? This is how Jonathan made 54¢. *Show picture in the book.*
- Did you do it differently or the same way?
- Can you think of one more way to make 54¢?
- Will Jonathan have money left over to put into the penny pot after getting his face painted?
- How much?

Page 23:

*Show picture in the book. I will cover up the amount.* Let's count how much money Annie has. How much money does she have? Can you show the same amount? Can you show 53¢ in another way? Will Annie have money left over to put into the penny pot after getting her face painted? How much?

Page 25:

Do you think there is enough change in the penny pot now for Jessie to get her face painted? Use whatever resources you need to use to find out whether Jessie has enough money now, using the money in the penny pot, to get her face painted.

Student 1: Rachel had 52¢. I made 52¢ with 5 dimes and 2 pennies.

Teacher: Great! Do you think that is the fewest amount of coins we can use to make 52¢?

Student 1: I don't know.

Teacher: Well how do we be sure that we are using the fewest amount of coins?

Student 1: We start with the highest coin value.

Teacher: Which is?

Student 1: a quarter

Teacher: So how many quarters can we use?

Student 1: 2 quarters. 3 would be too many.

Teacher: Okay, and then what is the next highest value coin that we can use?

Student 1: a dime?

Teacher: Okay, but if we added a dime, how much would we have?

Student 1: 60¢, which is too much. We need a smaller coin. Maybe a penny would work.

Teacher: Okay, how many pennies do we need to add to make 52¢?

Student 1: 2 pennies. So we used 2 quarters and 2 pennies. 4 coins in all.

Student 1: I made 54¢ differently. I used two quarters and 4 pennies because that is the least amount of coins and that is easier to make.

Teacher: How did you know that?

Student 1: Because we were making 53 and 52¢ before, so I just added on the right amount of pennies to those to make 54¢.

Student 1: I showed 53¢ with 2 quarters and 3 pennies.

Teacher: Is that the least amount of coins you can use?

Student 1: yes

Teacher: Can anyone think of another way to make 53¢, even though you will probably use more coins?

Student 2: I used 5 dimes and 3 pennies.

Students will work independently to solve this problem.

<p><i>I will stand back for a couple minutes and let students work on their own to find out whether or not Jessie has enough money to get her face painted.</i></p> <p>Does Jessie have enough money to get her face painted?</p>	<p><u>Student 1:</u> Yes, she does have enough money to get her face painted.</p> <p><u>Teacher:</u> How did you figure this out?</p> <p><u>Student 1:</u> I counted up all of the money that people put into the penny pot and it was 12¢. I knew that Jessie had 39¢ to start with, so I added 12¢ to 39¢ and got 51¢. It costs 50¢ to get a face painting, so Jessie did have enough money.</p> <p><u>Teacher:</u> Did anyone solve the problem any differently?</p> <p><u>Student 2:</u> First I made the 39¢ that Jessie had. Then I went through each amount that was put into the penny pot and I added it to the 39¢. So I added 3¢, 2¢, 4¢, and then 3¢, and I got 51¢. 51¢ is more than 50¢ so I knew that Jessie had enough money.</p>
<p><b>AFTER</b></p>	
<p><i>I will demonstrate a coin game with students. I will place a handful of coins under a piece of paper where the students cannot see. I will tell the students how many coins I have and what the total is. The students must guess what the coins are that I have. They can use their own coins to work out the problems.</i></p> <p>I have 5 coins and I have 81¢. Can you guess what coins I have? (3 quarters, 1 nickel, 1 penny)</p> <p>I have 11 coins. I have \$1.25. Can you guess what coins I have? (10 dimes, 1 quarter)</p> <p>I have 13 coins. I have \$2.00. Can you guess what coins I have? (5 quarters, 6 dimes, 2 nickels)</p>	<p><u>Student 1:</u> You have three quarters, 1 nickel and a penny.</p> <p><u>Teacher:</u> How did you know this?</p> <p><u>Student 1:</u> Because three quarter is 75¢ and then a nickel is 5¢ and a penny is 1¢. Together that is 5 coins and 81¢ like you said.</p> <p><u>Student 1:</u> You have 4 quarters, 2 dimes, and 5 pennies.</p> <p><u>Teacher:</u> That is actually not what I have. But you are correct. That is 11 coins and also \$1.25. I guess there must be another way to make \$1.25 using 11 coins. Can you find the other way?</p> <p><u>Student 2:</u> You have 10 dimes and 1 quarter.</p> <p><u>Student 1:</u> You have 7 quarters, 1 dime, and 5 nickels.</p> <p><u>Teacher:</u> How did you know this?</p> <p><u>Student 1:</u> Because 7 quarter is \$1.75. Then 1 dime is \$1.85. Plus 5 nickels is \$1.90. Oh no, we are short 10¢.</p> <p><u>Teacher:</u> You had 13 coins, but you are short 10¢. Did someone else find another way to make \$2.00 using 13</p>

<p><i>I will ask if there is a brave student who would like to come up with their own problem to try to stump the class. While this student is preparing his/her coin collection and counting his/her coins, I will ask the rest of the students to make different amounts with their coins.</i></p>	<p>coins?  <u>Student 2:</u> Yes. With 5 quarters, 6 dimes, and 2 nickels.</p>
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**MODIFICATIONS FOR STUDENTS WITH SPECIAL NEEDS**

**CHALLENGE Problem:** For students who need further challenging, I will ask them how much more Jessie would need if she had 39¢ and it cost 75¢ to get her face painted. How about if it cost \$1.00? \$2.00?

Say Jessie has no money. She wants to get her face painted, but it costs \$2.00. Jessie has four friends. They each have more than \$2.00, but less than \$3.00. Each of her friends contributes to Jessie’s face-painting fund with their left over money. Together, they contribute \$2.40. What is **one possibility** for the amount that each of Jessie’s friends contributed to the \$2.40?

- Friend 1:
- Friend 2:
- Friend 3:
- Friend 4:

**REMEDIAL Problem:** For students who are struggling, I will ask them to work independently on these problems that I will have prepared:

- Illustrate the value of a penny.
- Illustrate how many pennies equal a nickel.
- Illustrate how many nickels equal a dime.
- Illustrate the value of a quarter.
- Illustrate how many nickels equal a quarter.
- Illustrate how many quarters equal a dollar.
- How many pennies equal a dollar?
- How many dimes equal a dollar?
- If I have a quarter, and two dimes, how much money do I have?
- If I have a dime and three pennies, how much money do I have?