

Anchor Paper Scoring and Rationales - Task: Coins in Pocket

Name: Student A

Criteria	Performance Level (Advanced, Proficient, Developing, Emerging)	Rationale
Mathematical Understanding	Emerging	This student applies limited mathematical concepts and skills in an attempt to find a solution. The student used three quarters and three dimes but we have no indication that the student knows the amount of the coins. The student did not follow the constraints of the task.
Problem Solving	Emerging	There is no problem solving strategy evident. It appears as if the student just drew coins on the paper.
Communication and Reasoning	Emerging	The student uses no mathematical language to communicate his thinking. We do not know what amount of money the student thinks is represented.
Representations and Connections	Developing	The student uses an incomplete representation to model the problem. While the student did draw coins, there are no values associated with the coins.

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Name: Student B

Criteria	Performance Level (Advanced, Proficient, Developing, Emerging)	Rationale
Mathematical Understanding	Advanced	The student applied mathematical concepts and skills which lead to a valid and correct solution. The student used five quarters, one nickel, three dimes, and three pennies to equal \$1.63. This followed all of the constraints of the task and provided a correct solution. The student also had two additional correct answers. While the student did provide a solution that did not follow all of the constraints of the task and one that is a repeat of the first solution, it is clear that the student has a firm understanding that different combinations of coins can result in the same amount of money. The student used relationships among mathematical concepts when a quarter and a nickel were traded for three dimes in one of the solutions.
Problem Solving	Advanced	The student used a problem solving strategy that displays an understanding of the underlying mathematical concept. For the first and second solutions on the page, the student started with an odd number of quarters and then counted up to a \$1.63 making sure to follow the constraints of the problem. The student used a well developed strategy when a quarter and a nickel were traded for three dimes.
Communication and Reasoning	Proficient	The student supports arguments and claims with the coins drawn and the total amount of \$1.63 written beside the coins drawn.
Representations and Connections	Advanced	The student uses a representation with accurate labels to model the problem. The coins are drawn with the amounts inside and lines are drawn to separate the different coins. The student's representation of the coins leads to a deeper understanding. Each solution has one nickel and three pennies, but it appears when the student removes quarters, he adds in the equivalent amount in dimes. From the first solution to the second, the student trades two quarters for five dimes. He does the same trading from solution two to the one in the corner of paper, two quarters are removed and replaced with five dimes.

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Name: Student C

Criteria	Performance Level (Advanced, Proficient, Developing, Emerging)	Rationale
Mathematical Understanding	Proficient	The student applied mathematical concepts and skills which lead to a valid solution. The student used five quarters, one dime, four nickels, and eight pennies to arrive at the total of \$1.63. While the student did not follow all of the constraints of the task, there were more nickels than dimes, there is a clear mathematical understanding of selecting coins for a given amount of money.
Problem Solving	Proficient	The student used a problem solving strategy that displays an understanding of the underlying mathematical concept. For the first and second solutions on the page, the student started with an odd number of quarters and then counted up to a \$1.63. When the student realized that he was breaking the constraint of fewer than 20 pennies a trade was made for two nickels.
Communication and Reasoning	Proficient	The student justifies the solution by counting the money over the coins drawn.
Representations and Connections	Proficient	The student uses a representation with accurate labels to explore and model the problem. While the student does have a cent sign instead of a dollar sign all other notations are accurate.

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Name: Student D

Criteria	Performance Level (Advanced, Proficient, Developing, Emerging)	Rationale
Mathematical Understanding	Advanced	The student applied mathematical concepts and skills which lead to a valid and correct solution. The student used five quarters, one nickel, three dimes, and three pennies to equal \$1.63. This followed all of the constraints of the task and provided a correct solution. The student also had two additional correct answers: one quarter, thirteen dimes, one nickel, and three pennies and three quarters, eight dimes, six pennies, and one nickel. It is clear that the student had a firm understanding that different combinations of coins can result in the same amount of money. The student used relationships among mathematical concepts when ten dimes were traded for four quarters.
Problem Solving	Advanced	The student used a problem solving strategy that displays an understanding of the underlying mathematical concept. The student started with an odd number of quarters and then counted up to a \$1.63 making sure to follow the constraints of the problem. His strategy demonstrated efficiency in using the greatest amount of quarter's possible for the problem. The student used a well-developed strategy when ten dimes were traded for four quarters.
Communication and Reasoning	Advanced	The student justifies the solution by drawing the coins and keeping track of the total. The student uses precise mathematical language to communicate thinking by keeping track of the amount of money using the dollar, cent, addition, and equal symbols.
Representations and Connections	Advanced	The student uses a representation with accurate labels to model the problem. The coins are drawn and the student keeps a running total of the amount. A backslash (/) separates solutions. The student's representation of the coins lead to a deeper understanding when ten dimes were traded for four quarters.

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Name: Student E

Criteria	Performance Level (Advanced, Proficient, Developing, Emerging)	Rationale
Mathematical Understanding	Proficient	The student applied mathematical concepts and skills which lead to a valid solution. The student used five quarters, three dimes, one nickel, and three pennies to arrive at the total of \$1.63. While the student's second solution did not follow all of the constraints of the task, there is a clear mathematical understanding that different combinations of coins can result in the same amount of money.
Problem Solving	Proficient	The student used a problem solving strategy that displays an understanding of the underlying mathematical concept. The student started with an odd number of quarters and then counted up to a \$1.63. The student's fourth solution shows the student traded five pennies for one nickel which also displays an understanding of the underlying mathematical concept.
Communication and Reasoning	Developing	The student provides limited evidence to support arguments. The coins are drawn but the values are not written and the total amount \$1.63 is not written.
Representations and Connections	Developing	The student uses an incomplete or limited representation to model the problem. The coins are drawn but the values are not written and the total amount \$1.63 is not written.

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Name: Student F

Criteria	Performance Level (Advanced, Proficient, Developing, Emerging)	Rationale
Mathematical Understanding	Proficient	The student applied mathematical concepts and skills which lead to a valid solution. The student used five quarters, three dimes, one nickel, and three pennies to arrive at the total of \$1.63. While the student's second solution is incorrect, there is evidence of the mathematical understanding that different combinations of coins can result in the same amount of money.
Problem Solving	Proficient	The student used a problem solving strategy that displays an understanding of the underlying mathematical concept. The student started with an odd number of quarters and then counted up to a \$1.63.
Communication and Reasoning	Proficient	The student justifies the solution by drawing the coins, the values, and keeping track of the total by adding the dollar and sixty-three cents together. Evidence of organized reasoning is demonstrated when the student chunks the coins into two portions; one representing the dollar portion and the other is the remaining cents.
Representations and Connections	Proficient	The student uses a representation with accurate labels to explore and model the problem. The student accurately uses the cent, dollar, and equal sign.