

8<sup>th</sup> grade Mathematics NAEP item

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18. Leroy has one quarter, one dime, one nickel, and one penny. Two of the coins are in his left pocket and the other two coins are in his right pocket. The coins have been randomly placed in the two pockets.

What is the probability that Leroy will be able to purchase a 30-cent candy bar with the two coins in his left pocket?

Using the coins, explain your reasoning.

Satisfactory - Student Response

18. Leroy has one quarter, one dime, one nickel, and one penny. Two of the coins are in his left pocket and the other two coins are in his right pocket. The coins have been randomly placed in the two pockets.

Handwritten student response for problem 18:

what is the chance that Leroy will be able to buy a 30 cent candy bar with the money that is in his left pocket?

$$\begin{array}{r} 25 \\ + 10 \\ \hline 35 \end{array}$$

$$\begin{array}{r} 25 \\ + 5 \\ \hline 30 \end{array}$$

$$\begin{array}{r} 25 \\ + 1 \\ \hline 26 \end{array}$$

$$\begin{array}{r} 10 \\ + 5 \\ \hline 15 \end{array}$$

$$\begin{array}{r} 10 \\ + 1 \\ \hline 11 \end{array}$$

$$\begin{array}{r} 5 \\ + 1 \\ \hline 6 \end{array}$$

There is a  $\frac{1}{6}$  chance because in his left pocket it could either be (25,10) (25,5) (25,1) (10,1) (10,5) (5,1). So that is  $\frac{1}{6}$ .

18. Leroy has one quarter, one dime, one nickel, and one penny. Two of the coins are in his left pocket and the other two coins are in his right pocket. The coins have been randomly placed in the two pockets.

The probability Leroy will be able to purchase a 30-cent candy bar with the two coins in his left pocket is 2 out of 5. He could have a quarter and dime or a quarter and nickel which would make him have enough money but he could also have a quarter and penny, dime and nickel, dime and penny, or a nickel and penny in his left pocket which would not be enough money.