

Dimes and Quarters

The only coins that Alexis has are dimes and quarters.

- Her coins have a total value of \$5.80.
- She has a total of 40 coins.

Which of the following systems of equations can be used to find the number of dimes, d , and the number of quarters, q , Alexis has? Explain your choice.

a.
$$\begin{cases} d + q = 5.80 \\ 40d + 40q = 5.80 \end{cases}$$

b.
$$\begin{cases} d + q = 40 \\ 0.25d + 0.10q = 5.80 \end{cases}$$

c.
$$\begin{cases} d + q = 5.80 \\ 0.10d + 0.25q = 40 \end{cases}$$

d.
$$\begin{cases} d + q = 40 \\ 0.10d + 0.25q = 5.80 \end{cases}$$



Commentary

This task does not actually require that the student solve the system but that they recognize the pairs of linear equations in two variables that would be used to solve the system. This is an important step in the process of solving systems.

Solution: Dimes and Quarters

The correct answer is (d). If d represents the number of dimes and q the number of quarters, the total number of coins would be $d + q$, which is given as 40 in the prompt: $d + q = 40$

Since each dime is worth ten cents and each quarter worth twenty-five cents, their total value would be $0.10d + 0.25q$ which would total 5.80: $0.10d + 0.25q = 5.80$

