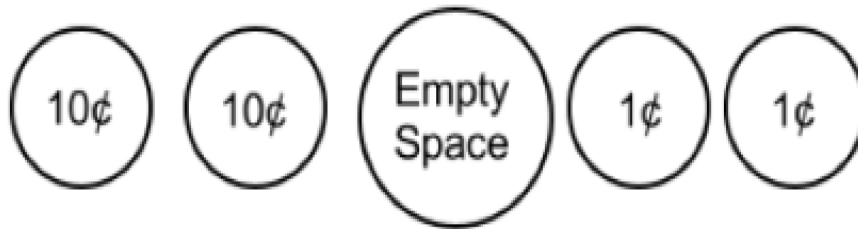# Coin Switcheroo

How many moves does it take to switch the position of the coins?

Coin Switcheroo is a game played with coins—in this case, pennies and dimes—and the board pictured below. The object of the game is to use a series of moves to switch the places of the pennies and the dimes to the opposite side of the board.
Put 2 dimes and 2 pennies on the board in the marked spaces. You can make only 2 kinds of moves:

• You can slide any coin into an empty space next to it.

• You can jump any coin over 1 coin next to it if there's an empty space on which to land.

1. Plan a sequence of moves that will switch the positions of the dimes and the pennies. Try your sequence to be sure it works.

    a. Record the moves you made so that someone else could follow the same sequence to switch the coins.

    b. Now try to find the sequence with the fewest number of moves to switch the coins and record it so that someone else could follow it.

2. Next, extend the board by adding 1 place on each side and use 3 dimes and 3 pennies. Do a coin switcheroo using the same kinds of moves. Again, try to switch the positions of the coins using as few moves as possible. Record your sequence of moves.

3. Finally, in your report, include advice about the techniques you found to switch the coins using the fewest number of moves.