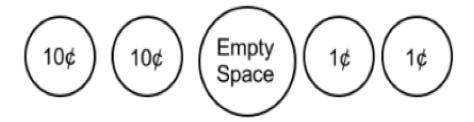
## Coin Switcheroo

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.

From: Olson, J., Olson, M., Slovin, H., Venenciano, L., & Zenigami, F. (2015). *A modeling approach to algebra, second edition* (p. 4). Honolulu, HI: University of Hawai'i at Mānoa, Curriculum Research & Development Group.

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