

Lesson 10-3

Reinforce Understanding

Math is Playful

I can use patterns and relationships to make sense of the Tower of Hanoi puzzle and think logically about its solutions.

Worked model

Before moving anything, I describe what the solved puzzle will look like: the discs in the same order — smallest on top to largest on bottom — but on a different rod.

1. Then I play the small cases: a one-disc tower takes 1 move, and a two-disc tower takes 3 moves.
2. A three-disc tower takes at least 7 moves. Small cases are how mathematicians play.

Practice

Complete each exercise. Show the reasoning that supports your answer.

1. What is the fewest number of moves needed to solve a three-disc Tower of Hanoi puzzle?

Circle the letter of the best answer. Show how you know.

- A. 3 moves
- B. 6 moves
- C. 7 moves
- D. 9 moves

Show your work

2. Which move is against the rules of the Tower of Hanoi?

Circle the letter of the best answer. Show how you know.

- A. Moving one disc at a time
- B. Moving the top disc from a stack
- C. Placing a larger disc on top of a smaller disc
- D. Placing a smaller disc on top of a larger disc

Show your work

3. What will the solved puzzle look like?

Circle the letter of the best answer. Show how you know.

- A. The discs in the same order — smallest on top to largest on bottom — but on a different rod
- B. The discs in reverse order, largest on top
- C. The discs spread out with one disc on each rod
- D. The discs back on the starting rod in any order

Show your work
