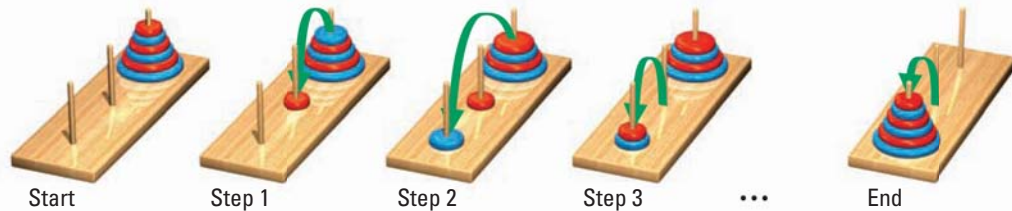


65. **TOWER OF HANOI** In the puzzle called the Tower of Hanoi, the object is to use a series of moves to take the rings from one peg and stack them in order on another peg. A move consists of moving exactly one ring, and no ring may be placed on top of a smaller ring. The minimum number a_n of moves required to move n rings is 1 for 1 ring, 3 for 2 rings, 7 for 3 rings, 15 for 4 rings, and 31 for 5 rings. Find a formula for the sequence. What is the minimum number of moves required to move 6 rings? 7 rings? 8 rings?



66. **MULTI-STEP PROBLEM** The mean distance d_n (in astronomical units) of each planet (except Neptune) from the sun is approximated by the Titius-Bode rule, $d_n = 0.3(2)^{n-2} + 0.4$, where n is a positive integer representing the position of the planet from the sun.
- Evaluate** The value of n is 4 for Mars. Use the Titius-Bode rule to approximate the distance of Mars from the sun.
 - Convert** One astronomical unit is equal to about 149,600,000 kilometers. How far is Mars from the sun in kilometers?
 - Graph** Graph the sequence given by the Titius-Bode rule.
67. **TAKS REASONING** For a display at a sports store, you are stacking soccer balls in a pyramid whose base is an equilateral triangle. The number a_n of balls per layer is given by $a_n = \frac{n(n+1)}{2}$ where $n = 1$ represents the top layer.
- How many balls are in the fifth layer?
 - How many balls are in a stack with five layers?
 - Compare* the number of balls in a layer of a triangular pyramid with the number of balls in the same layer of a square pyramid.
68. **CHALLENGE** Using the true statements from Exercises 59–62 on page 799 and the special formulas on page 797, find a formula for the number of balls in the top n layers of the pyramid from Exercise 67.

TAKS PRACTICE at classzone.com

MIXED REVIEW FOR TAKS

REVIEW
Lesson 1.5;
TAKS Workbook

69. **TAKS PRACTICE** The sale price, y , for a pair of tennis shoes is $\frac{2}{3}$ of the original price, x . Which equation represents this relationship? **TAKS Obj. 1**
- (A) $y = \frac{2}{3}x$ (B) $y = \frac{3}{2}x$ (C) $y = x + \frac{2}{3}$ (D) $y = x - \frac{2}{3}$

REVIEW
Lesson 2.4;
TAKS Workbook

70. **TAKS PRACTICE** Which equation represents a line with a slope of -5 and a y -intercept of 2? **TAKS Obj. 3**
- (F) $y = -5x + 2$ (G) $y = -5x + 10$ (H) $y = 2x - 5$ (J) $y = 2x + 10$