

# 9-1 Standardized Test Prep

## Mathematical Patterns

### Multiple Choice

For Exercises 1–6, choose the correct letter.

1. What are the first five terms of the sequence?

$$a_n = 3^n - 1$$

- (A) 2, 5, 8, 11, 14                      (C) 2, 8, 26, 80, 242  
(B) 3, 9, 27, 81, 243                      (D) 2, 4, 8, 16, 32

2. The formula  $a_n = 3n + 2$  best represents which sequence?

- (F) 3, 6, 9, 12, 15                      (H) 4, 7, 10, 13, 16  
(G) 5, 8, 11, 14, 17                      (I) 5, 9, 29, 83, 245

3. Which pattern can be represented by  $a_n = n^2 - 3$ ?

- (A) -1, 0, 5, 12, 21    (B) 4, 7, 12, 19, 28    (C) 1, 4, 9, 16, 25    (D) -2, 1, 6, 13, 22

4. The sequence 4, 16, 36, 64, 100, . . . can best be represented by which formula?

- (F)  $a_n = 4n$                       (G)  $a_n = 4n^2$                       (H)  $a_n = 4n^3$                       (I)  $a_n = 2n^4$

5. For the sequence 0, 6, 16, 30, 48, . . . , what is the 40th term?

- (A) 3198                      (B) 3200                      (C) 4000                      (D) 16,000

6. A student sets up a savings plan to transfer money from his checking account to his savings account. The first week \$10 is transferred, the second week \$12 is transferred, the third week \$16 is transferred, and the fourth week \$24 is transferred. If this pattern continues and he starts with \$100 in his checking account, how many weeks will pass before his balance is zero?

- (F) 4                      (G) 5                      (H) 6                      (I) 7

### Short Response

7. After training for and running a marathon, an athlete wants to reduce her daily run by half each day. The marathon is about 26 mi. How many days will it take after the marathon before she runs less than a mile a day? Show your work.