1. Margaret adopted 5 cats from the shelter. Each year, she adopts 3 more cats. Let f(1) = 5 represent the number of cats Margaret had the first year. Which recursive formula could you use to find the total number of cats Margaret will have after *x* years?

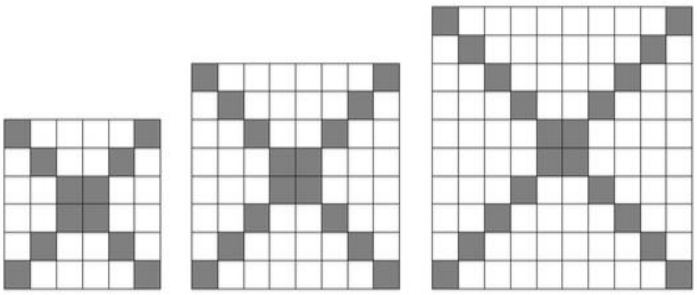
A. $f(x) = 3 \bullet f(x+1)$

B. $f(x+1) = 3 \bullet f(x)$

C. $f(x) = f(x+1) + 3$

D. $f(x+1) = f(x) + 3$

2. The diagrams below represent the first three terms of a sequence.



Assuming the pattern continues, which formula determines a_n, the number of shaded squares in the nth term?

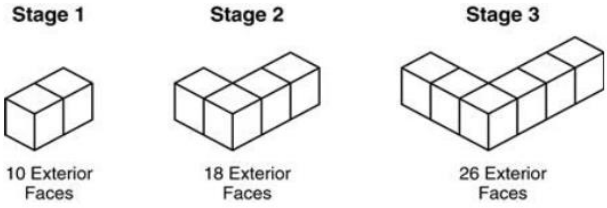
(1) $a_n = 4n + 12$

(2) $a_n = 4n + 8$

(3) $a_n = 4n + 4$

(4) $a_n = 4n + 2$

3. **A pattern begins with two cubes and continues by adding a cube to each side as shown below.**



Which function could be used to determine the number of exterior faces in stage *n*?

A. $f_n = f_{n-1} + 8$, where $f_1 = 10$

B. $f_n = f_{n-1} + 10$, where $f_1 = 8$

C. $f_n = 8 \bullet f_{n-1} + 2$, where $f_1 = 10$

D. $f_n = 10 \bullet f_{n-1} + 2$, where $f_1 = 8$

4. A pool service treats a community's pool by initially adding 600 ounces of chlorine to the water and then 225 ounces of chlorine at the beginning of each week. Each week, 30% of the chlorine in the entire pool evaporates.

Which rule would determine how much chlorine is in the pool after *n* weeks?

Ⓐ $a_n = 600 + 225\ (n - 1)$

Ⓑ $a_n = 600 + 225\ (0.7)\ (n - 1)$

Ⓒ $a_1 = 600;\ a_n = (0.3)\ a_{n-1} + 225$

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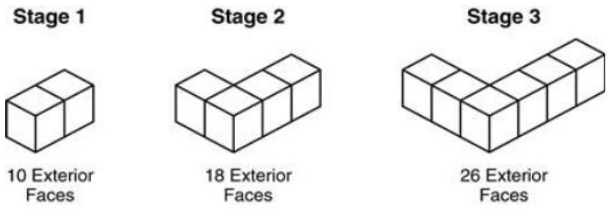

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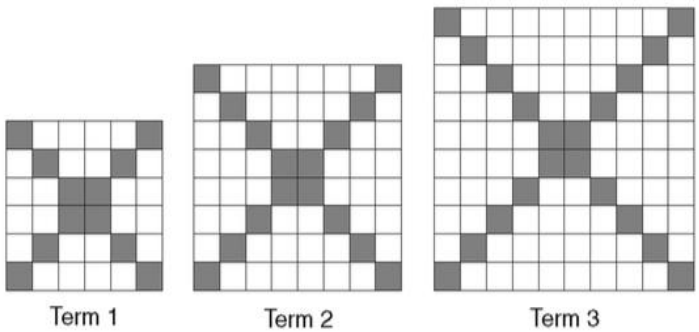

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