

Mathematics Algebra I Benchmark Assessment

- 7 Allison is playing a video game in which the number of jewels that can be collected doubles every level. On level 1, there are 3 jewels that can be collected. Which recursive formula gives the number of jewels Allison can collect on level n ?

(A) $a_n = 3(2^n)$

(B) $a_n = 2n + 3$

(C) $a_n = (a_{n-1})^2, a_1 = 3$

(D) $a_n = 2a_{n-1}, a_1 = 3$

- 8 Talia is training for a race by increasing the number of miles she runs every training day. The miles she has run so far are listed below.

0.50, 0.75, 1.25, 2.25

Talia's training program follows an explicit rule to calculate the number of miles she runs. Which of the following explains how to calculate the number of miles Talia should run?

- (A) Talia should run a half mile on her first day. Each day afterwards, she should run 0.25 miles more than the previous day.
- (B) Talia should run a half mile on her first day. Each day afterwards, she should run 0.50 miles more than the previous day.
- (C) Talia should run a half mile on her first day. Each day afterwards, she should run 0.25 miles less than twice her previous run.
- (D) Talia should run a half mile on her first day. Each day afterwards, she should run 1.25 miles less than four times her previous run.