12.1 Work with Sequences

TEKS a.1, a.5, a.6; P.4.A

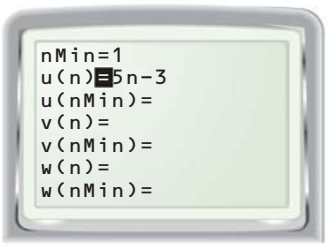
QUESTION How can you use a graphing calculator to perform operations with sequences?

EXAMPLE Find, graph, and sum terms of a sequence

Use a graphing calculator to find the first eight terms of $a_n = 5n - 3$. Graph the sequence. Then find the sum of the first eight terms of the sequence.

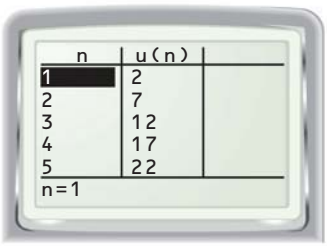
STEP 1 *Enter sequence*

Put the graphing calculator in *sequence* mode and *dot* mode. Enter the sequence. Note that the calculator uses $u(n)$ rather than a_n.



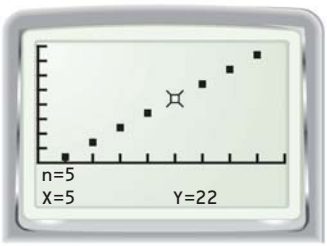
STEP 2 *Calculate terms*

Use the *table* feature to view the terms of the sequence. The first eight terms are 2, 7, 12, 17, 22, 27, 32, and 37.



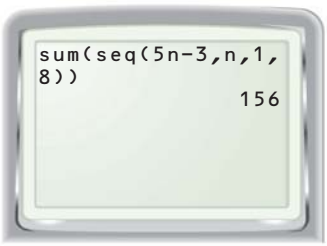
STEP 3 *Graph sequence*

Set the viewing window so that $1 \le n \le 8$, $0 \le x \le 9$, and $0 \le y \le 40$. Graph the sequence. Use the *trace* feature to view the terms of the sequence.



STEP 4 *Find sum of terms*

Use the *summation* feature to find the sum of the first eight terms of the sequence. The screen shows that the sum is 156.



PRACTICE

Use a graphing calculator to (a) find the first ten terms of the sequence, (b) graph the sequence, and (c) find the sum of the first ten terms of the sequence.

1. $a_n = 4n + 1$ **2.** $a_n = 3(n + 2)$ **3.** $a_n = 35 - 3n$

4. $a_n = 15 + 2n$ **5.** $a_n = 3 + n^2$ **6.** $a_n = 2^{n-1}$