

Reminder: A **geometric sequence** has successive terms that have a **common ratio (r)**. This means that each term is multiplied by the same number to generate the next term.

The general form of a geometric sequence is usually the best form to use: $g_n = g_k (r)^{n-k}$

Example 1: Find an equation for the geometric sequence with $g_3 = -3$ and $r = 10$.

Example 2: Let g_n be a geometric sequence with $g_2 = 24$ and $r = \frac{1}{2}$. Find an expression for g_n . Use the expression for g_n to find g_5 .

The examples above were relatively quick and easy because we were given one term of the sequence and the value of r . However, how can we deal with problems that give us two terms but not the value of r ?

Geometric Sequences: Given 2 Terms

1. Use both terms to create one equation in general form – Use the larger k value term as the g_n term.
2. Solve for r using the equations created from Step 1.
3. Use the value of r found in Step 2 along with either term given in the problem to write the general form of the geometric sequence.

Example 3: Let g_n be a geometric sequence with $g_3 = -2$ and $g_6 = 128$. Find an expression for g_n . Use the expression for g_n to find g_{11} .

Example 4: Let g_n be a geometric sequence with $g_2 = 48$ and $g_7 = 1.5$. Find an expression for g_n . Use the expression for g_n to find g_{11} .