



ARITHMETIC SEQUENCES AND SERIES | KEY FACTS

- When the terms of a sequence progress by adding a fixed amount each time, this is called an arithmetic sequence.
- The n th term of an arithmetic sequence with first term a and common difference d is $u_n = a + (n - 1)d$.
- The sum of the first n terms of an arithmetic series with first term a and common difference d is $S_n = \frac{n}{2} [2a + (n - 1)d] = \frac{n}{2} (a + l)$.

ARITHMETIC SEQUENCES AND SERIES | EXAMPLE PROBLEM PAIR 1

The first term of an arithmetic sequence is 5 and the common difference is 7.

Find the term with the value 355.

An arithmetic progression has first term 6 and common difference 11.

Find the tenth term.

ARITHMETIC SEQUENCES AND SERIES | EXAMPLE PROBLEM PAIR 2

The fifth term of an arithmetic progression is 7 and the eighth term is 16.

Find the first term, a , and common difference, d .

The second term of an arithmetic sequence is 21 and the ninth term is -7.

Find the 23rd term.

ARITHMETIC SEQUENCES AND SERIES | EXAMPLE PROBLEM PAIR 3

An arithmetic sequence has first term 5 and common difference 10. The sum of the first n terms is 720.

Find the value of n .

An arithmetic progression begins 36, 32, 28, 24,

Find the possible values of n if $S_n = 176$.

- When the terms of a sequence progress by multiplying by a fixed amount each time, this is called a geometric sequence.
- The n th term of a geometric sequence with first term a and common ratio r is $u_n = ar^{n-1}$.
- The sum of the first n terms in a geometric sequence is $S_n = \frac{a(1-r^n)}{1-r}$.
- The sum to infinity of a geometric series is given by $S_\infty = \frac{a}{1-r}$, provided that $|r| < 1$.

