# Algebra 2 Series Name:

**Series – the sum of the terms of a sequence**

Finite sequence (has a last term) Finite series

Infinite sequence (doesn’t have a last term) Infinite series

**Arithmetic Series – a series whose terms from an arithmetic sequence**

 ex: finite arithmetic sequence

 finite arithmetic series

 Evaluate the series:

**Sum of a Finite Arithmetic Series:**

 ex: use the formula to evaluate the sum of the arithmetic series:

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Evaluate the series to the given term.

 to the 9th term

 arithmetic

Evaluate the series to the given term.

 to the 12th term

**Summation Notation**

 or using the formula:

Ex: Use summation notation to write the series for the first 50 terms:

 Arithmetic find the explicit formula:

 Number of Terms = 50

 First Term:

 Last Term:

**Evaluating an Arithmetic Series (using Summation Notation)**

a) number of terms = 20

b) first term =

 last term =

c) evaluate the series:

ex:

**Using the calculator to find Summation Notations**

**Geometric Series – a series whose terms from an geometric sequence**

 ex: finite geometric sequence

 finite geometric series

 Evaluate the series:

**Sum of a Geometric Series:**

 Ex: evaluate the geometric series: geometric series

 = 186

 Ex: evaluate the geometric series:

APPLICATION: *The Floyd family starts saving for a vacation that is one year away. They start with $125. Each month they save 8% more than the previous month. How much will they have saved 12 months later?*

 Growth factor =

 Month Savings

 1

 2

 3

**Convergent and Divergent Series**

A geometric series *converges* when gets closer and closer to some sum

 *diverges* when approaches no limit

 ex: geometric,

 Diverges. Does not have a sum.

 ex: geometric,

 Converges. Has a sum.

**Sum of an Infinite Geometric Series:**

 Ex: evaluate the geometric series: geometric series

 = converges

Evaluate each infinite series that has a sum:

 ex:

 Geometric series. (converges, the sum of the infinite series exists)

 =

 ex:

 Arithmetic series. (**no sum** exists because the series is not geometric)

**Determine if the series is arithmetic or geometric. Then evaluate the series for the given term.**

ex:

 find the sum of the first 8 terms

 ex:

 find the sum of the first 8 terms