# 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