

Arithmetic Sequence	Arithmetic Series (Sum)	Geometric Sequence	Geometric Series
$a_n = a_1 + (n - 1)d$	$S_n = \frac{n}{2} (a_1 + a_n)$	$a_n = a_1 \cdot r^{n-1}$	$S_n = \frac{a_1(1 - r^n)}{1 - r}$

Part 1: Find the first five terms of each arithmetic sequence described.

1.) $a_1 = -12, d = -4$

2.) $a_1 = \frac{5}{6}, d = \frac{1}{3}$

Part 2: Find the indicated term of each arithmetic sequence.

3.) $a_1 = 5, d = 3, n = 10$

4.) a_{18} for $-6, -7, -8, \dots$

5.) 166 is the _____th term of $30, 34, 38, \dots$

Part 3: Find the sum of each arithmetic series. [HINT: use arithmetic seq. formula first to find n.]

6.) $5 + 7 + 9 + 11 + \dots + 27$

7.) $-4 + 1 + 6 + 11 + \dots + 91$

8.) $\sum_{k=3}^{10} (2k + 3)$

[Hint: plug in k to get a_1, a_n , and count from 3 to 10 to get n.]

Part 4: Find the next two terms of each geometric sequence.

9.) $-15, -30, -60, \dots$

10.) $80, 40, 20, \dots$

Part 5: Find the indicated term of each geometric sequence.

11.) $a_1 = 5, r = 3, n = 6$

12.) $a_1 = 20, r = -3, n = 4$

Part 6: Find the sum of each geometric series.

13.) $162 + 54 + 18 + \dots$ to 6 terms

14.) $2 + 4 + 8 + \dots$ to 8 terms

15.) $\sum_{n=2}^5 (-3)^{n-1}$

Infinite Geometric Series $S = \frac{a_1}{1-r}$	
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Part 7: Find the sum of each infinite geometric series, if it exists.

- 16.) $18 - 6 + 2 - \dots$ 17.) $2 + 6 + 18 \dots$ 18.) $6 + 4 + \frac{8}{3} \dots$ 19.) $\sum_{n=1}^{\infty} (3)\left(\frac{1}{4}\right)^{n-1}$

Part 8: You are working on cutting lawns. You're given a special pay scale. Here is what you get paid after each of n number of weeks:

\$2400	\$800	\$266.66	\$88.88	\$29.63
week 1	week 2	week 3	week 4	week 5

- 1.) Is this a Geometric Series? _____ What is the value of r? _____ (Hint: $Week\ 2 \div Week\ 1$)

- 2.) How much will you make after 3 weeks?

- 3.) How much will you make total, after 6 weeks? This means $n = 6$. Use Geo Series formula. Look upper left.

- 4.) How much will you make total, after 10 weeks?

- 5.) How much will you make if you do this job forever? (Hint: use infinite formula)

- 6.) Is it worth your time to keep doing this job for a long time? Explain why or why not!