

1. A new graduate accepts a job as a data processing clerk at a starting salary of \$18,500 per year, with an annual increase of \$750. Suppose he stays in the job for ten years. How much will he earn in total after 10 years?

$$a_1 =$$

$$a_n =$$

$$n =$$

$$d =$$

2. Find $\sum_{n=1}^{14} (-5n + 3)$ using one of the arithmetic series formulas.

$$a_1 =$$

$$a_n =$$

$$n =$$

$$d =$$

3. Evaluate the following sums:

a. $\sum_{n=1}^7 (2n + 7)$

b. $\sum_{i=1}^5 (3i - 6)$

4. You borrowed \$6000 and agreed to pay it back over 5 years. Your **monthly** payments were \$145, \$144.25, \$143.50, \$142.75, ..., \$100.75

- a. How much did you pay over the life of the loan?

$$a_1 =$$

$$a_n =$$

$$n =$$

$$d =$$

- b. How much interest did she pay on this loan? That is, how much over \$6000 did she have to pay back?

5. Find the sum of the following series: $\sum_{i=2}^6 2(3)^{i-1}$

6. Find the partial sum of the following series: $\{1.01 + 2.02 + 4.04 + 8.08 + \dots + 4236247.04\}$

7. Because of air resistance, the length of each swing of a certain pendulum is 85% of the length of the previous swing. If the first swing has a length of 40 cm, find the total length the pendulum will swing before coming to rest.

Find the sum of the following series (if it exists. . .)

8. $\frac{1}{6} + \frac{1}{3} + \frac{2}{3} + \dots$

9. $15 + 10 + \frac{20}{3} + \frac{40}{9} + \dots$

10. $3 - \frac{9}{2} + \frac{27}{4} - \frac{81}{8} + \dots$

11. $\sum_{n=1}^{\infty} -6\left(\frac{2}{3}\right)^{n-1}$