

Algebra 2 Worksheet #7 Unit 9 page 1 _____

Solve each of the following problems. Show your work neatly organized.

1. Find the sum of the first 10 terms of an geometric sequence in which $a_1 = 5$ and $r = 2$.
2. Find the sum of the first 8 terms of the sequence defined by $a_n = (-2)^n$.
3. Find the sum of the first 10 terms of the sequence defined by $a_{n+1} = 0.5a_n$ where $a_1 = 128$.
4. Find the sum of the first 9 terms of the sequence 2, 6, 18, 54, ...
5. Evaluate the series $3 + 6 + 12 + 24 + 48 + \dots + 3072$.
6. Evaluate the infinite series $1 - 0.5 + 0.25 - 0.125 + \dots$

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Solve each of the following problems. Show your work neatly organized.

7. Evaluate: $\sum_{i=1}^{10} (-5)(-3)^{i-1}$

8. Evaluate: $\sum_{i=1}^{\infty} \left(\frac{2}{3}\right)\left(\frac{1}{2}\right)^{i-1}$

9. A job has a starting salary of \$45,000 with a guaranteed increase of 2.5% per year. Find the total salary for the first 10 years.

10. A ball is dropped from a height of 100 inches onto a concrete floor. On each bounce the ball rebounds to 80% of its previous height. What is the **total vertical distance** that the ball has traveled when it hits the floor for the tenth time? (Round your answer to the nearest tenth of an inch.)

11. A ball is dropped from a height of 100 inches onto a concrete floor. On each bounce the ball rebounds to 80% of its previous height. What is the **total vertical distance** that the ball will travel before it comes to rest? (Round your answer to the nearest tenth of an inch.)