

Algebra 2CP
Chapter 11 YOU CAN...

❖ **Find a specific term or the next four terms in an arithmetic or a geometric sequence**

1. 9, 15, 21, 27, ... 2. -4, 4, 12, 20, ... 3. 4, 2, 1, ... 4. 6, -2, 2/3, ...
5. Find the 12th term of 21, 32, 43, 54, 65, ... 6. Find the a_{12} term of 3.7, 3.3, 2.9, 2.5, 2.1, ...
7. Find the 10th term of 100, 200, 400, ... 8. Find the a_4 term of 8, 32, 128, ...

❖ **Find the arithmetic or geometric means**

9. Find the arithmetic means of 3, ____, ____, ____, 59
10. Find the geometric means of 3125, ____, ____, ____, 1280

❖ **Find the sum of an arithmetic or geometric series**

11. $4 + 10 + 16 + \dots + 34$ 12. $9 + 27 + 81 + \dots + 19,683$
13. The first 11 terms of $1/4, 1, 4, 16, \dots$ 14. S_{18} of $-5, 2, 9, \dots$

❖ **Find the sum of a series (arithmetic, geometric or infinite geometric) written in sigma notation**

15. $\sum_{n=1}^9 3 \cdot 4^{n-1}$ 16. $\sum_{n=1}^6 1(0.5)^{n-1}$ 17. $\sum_{n=1}^{10} 2n + 7$ 18. $\sum_{n=1}^4 7n - 2$

❖ **Determine if an infinite series has a sum and find that sum when possible**

19. $\sum_{n=1}^{\infty} 3\left(\frac{3}{4}\right)^{n-1}$ 20. $\sum_{n=1}^{\infty} 5\left(\frac{4}{3}\right)^{n-1}$ 21. $\sum_{n=1}^{\infty} 2(1.7)^{n-1}$ 22. $\sum_{n=1}^{\infty} 4(0.7)^{n-1}$

❖ **Write a repeating decimal as a fraction**

23. $0.\overline{17}$ 24. $1.\overline{27}$ 25. $3.\overline{15}$

❖ **Apply the formulas of this chapter to solve word problems**

(There will be AT LEAST TWO word problems on the test!)

26. A basketball team has a halftime promotion where a fan gets to shoot a 3-pointer to try to win a jackpot. The jackpot starts at \$5000 for the first game and increases \$500 each time there is not a winner. Ellis has tickets to the fifteenth game of the season. How much will the jackpot be for that game if no wins by then? (11.1)
27. Find the sum of the first 1000 positive even integers. (11.2)
28. What is the sum of the multiples of 3 between 3 and 9999, inclusive? (11.2)

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29. A culture initially contains 200 bacteria. If the number of bacteria doubles every 2 hours, how many bacteria will be in the culture at the end of 12 hours? (11.3)

30. Heavy rain cause a river to rise. The river rose three inches the first day, and each day it rose twice as much as the previous day. How much did the river rise in five days? (11.4)

31. In a physics experiment, a steel ball on a flat track is accelerated and then allowed to roll freely. After the first minute, the ball has rolled 120 feet. Each minute the ball travels only 40% as far as it did during the preceding minute. How far does the ball travel? (11.5)

❖ **Write the next five terms of a recursive sequence**

32. $a_1 = -2, a_{n-1} = a_n + 5$ 33. $a_1 = 3, a_{n-1} = 4a_n - 10$ 34. $a_1 = 2, a_{n-1} = 2a_n -$

❖ **Expand powers of a binomial**

(There will be an extra credit problem from this section on the test!)

35. $(x - y)^4$ 36. $(x - 4)^7$ 37. $(2x + 1)^6$

Here are the formulas you need to know from this chapter...

- (11.1) n^{th} Term of an Arithmetic Sequence (11.2) Sum of an Arithmetic Series

$$a_n = a_1 + (n - 1)d$$

$$S_n = \frac{n}{2}(a_1 + a_n)$$

- (11.3) n^{th} Term of a Geometric Sequence (11.4) Sum of a Geometric Series

$$a_n = a_1 r^{n-1}$$

$$S_n = \frac{a_1(1 - r^n)}{1 - r}$$

$$S_n = \frac{a_1 - a_n r}{1 - r}$$

- (11.5) Sum of an Infinite Geometric Series

$$S = \frac{a_1}{1 - r}$$