

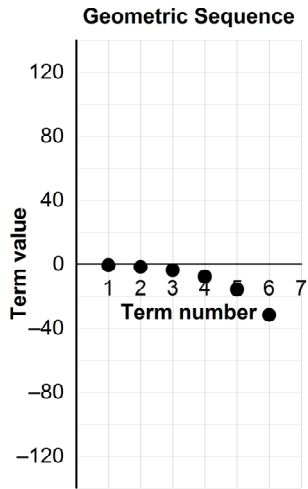
PreCalc 11 Chapter 1 Review Pack v1**Multiple Choice**

Identify the choice that best completes the statement or answers the question.

- _____ 1. Determine the first 4 terms of an arithmetic sequence, given the first term, $t_1 = -4$, and the common difference, $d = -2$.
- A. $-4, -6, -8, -10$ C. $-2, 2, 6, 10$
B. $-4, -2, 0, 2$ D. $-2, -6, -10, -14$
- _____ 2. Determine the common difference, d , of this arithmetic sequence: $-23, -17.6, -12.2, -6.8, \dots$
- A. $d = 5.4$ C. $d = -23$
B. $d = -5.4$ D. The sequence has no common difference.
- _____ 3. Determine the common difference, d , of this arithmetic sequence: $2, -2.5, -7, -11.5, \dots$
- A. $d = 2$ C. $d = 4.5$
B. $d = -4.5$ D. The sequence has no common difference.
- _____ 4. Determine the common difference, d , of this arithmetic sequence: $4, -16, -36, -56, \dots$
- A. $d = 4$ C. $d = -16$
B. $d = -20$ D. $d = 20$
- _____ 5. An arithmetic series has $t_1 = -7$ and $t_{42} = 75$; determine S_{21} .
- A. $S_{21} = 271$ C. $S_{21} = 273$
B. $S_{21} = 267$ D. $S_{21} = 269$
- _____ 6. The sum of the first 24 terms of an arithmetic series is 1284. The sum of the first 25 terms is 1375. The first term is 19. Determine d .
- A. $d = 3$ C. $d = 6$
B. $d = 1.5$ D. $d = 19$
- _____ 7. Which sequence could be geometric?
- A. $3, -1.2, 0.48, -0.192$ C. $-2, -2.1, -2.2, -2.3, \dots$
B. $-9, -6, -3, 0, \dots$ D. $-10, -50, -250, -1250, \dots$

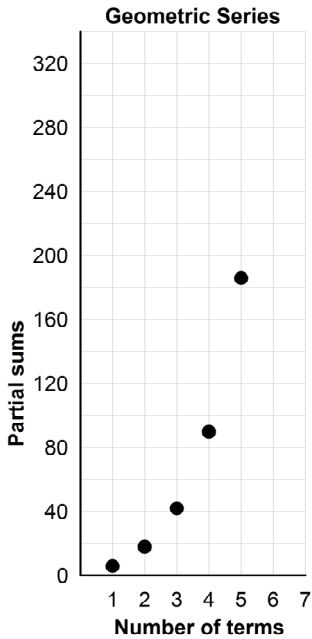
- _____ 8. Which sequence could be geometric?
- A. $6, -2, -\frac{2}{3}, -\frac{2}{9}, \dots$ C. $6, 2, \frac{2}{3}, \frac{2}{9}, \dots$
- B. $6, \frac{9}{2}, \frac{18}{5}, 3, \dots$ D. $6, 3, 2, \frac{3}{2}, \dots$
- _____ 9. 4096 is a term in which geometric sequence?
- A. $2, 4, 8, 16, \dots$ C. $2, 12, 72, 432, \dots$
- B. $4, 24, 144, 864, \dots$ D. $3, 6, 12, 24, \dots$
- _____ 10. Which sequence could be geometric?
- A. $-4, -9, -27, -81, \dots$ C. $-4, -8, -16, -324, \dots$
- B. $-4, -12, -36, -108, \dots$ D. $-4, -6, -18, -54, \dots$
- _____ 11. Determine the 6th term of this geometric sequence: $-9, 27, -81, 243, \dots$
- A. -1458 C. 2187
- B. 2430 D. -972
- _____ 12. Jane deposited \$1500 in a long-term savings account on her 23rd birthday. She did not make any more deposits or withdrawals. The account earned 7% per year. How much money did she have in the account when she turned 40?
- A. \$4428.25 C. \$3867.80
- B. \$5424.79 D. \$27 285.00
- _____ 13. The sum of the first 12 terms of which geometric series is 5460?
- A. $-3 + 6 - 12 + \dots + 6144$ C. $-2 - 8 + 16 - \dots + 4096$
- B. $-5 + 10 - 20 + \dots + 10 240$ D. $-4 + 8 - 16 + \dots + 8192$
- _____ 14. Determine the sum of the first 5 terms of this geometric series: $18 + 6 + 2 + \dots$
- A. 27 C. 45
- B. 36 D. 26.89
- _____ 15. The term values of a geometric sequence decrease and approach 0 as more points are plotted. Choose the most appropriate value for the common ratio.
- A. $r = -4$ C. $r = 0.8$
- B. $r = -0.4$ D. $r = 8$

___ 16. Which geometric sequence could this graph represent?



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|--|---|
| <p>A. $-1, -\frac{1}{2}, -\frac{1}{4}, -\frac{1}{8}, \dots$</p> <p>B. $-1, -3, -9, -27, \dots$</p> | <p>C. $-1, -2, -4, -8, \dots$</p> <p>D. $-1, 2, -4, 8, \dots$</p> |
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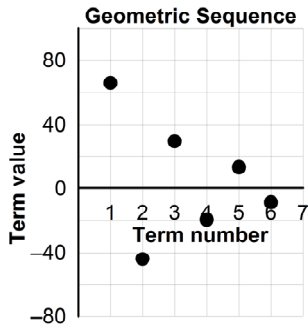
___ 17. Which geometric series could this graph represent?



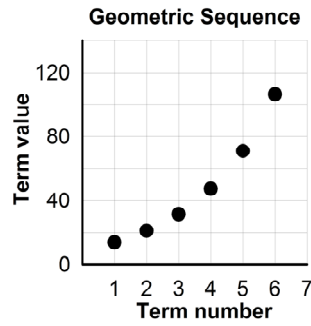
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| <p>A. $6 + \frac{1}{12} + \frac{1}{24} + \frac{1}{48} + \dots$</p> <p>B. $6 + 12 + 24 + 48 + \dots$</p> | <p>C. $6 - 12 + 24 - 48 + \dots$</p> <p>D. $6 + 18 + 54 + 162 + \dots$</p> |
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18. The common ratio of a geometric sequence is 1.5. Which graph could represent this geometric sequence?

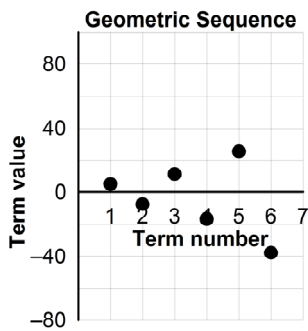
A.



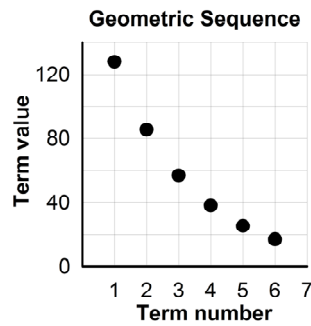
C.



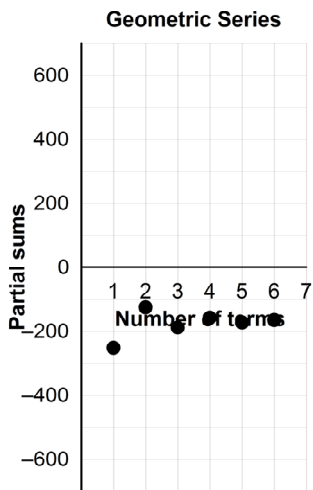
B.



D.



19. Which value of r could be the common ratio of the geometric series represented by this graph?



A. $r = 2$

C. $r = -2$

B. $r = \frac{1}{2}$

D. $r = -\frac{1}{2}$

- _____ 20. This infinite geometric series converges: $16 + 4 + 1 + \frac{1}{4} + \dots$
Determine its sum.
A. $S_\infty = 21\bar{3}$ B. $S_\infty = 64$ C. $S_\infty = 4$ D. $S_\infty = 5\bar{3}$
- _____ 21. Determine whether this infinite geometric series has a finite sum: $2 + \frac{2}{5} + \frac{2}{25} + \frac{2}{125} + \dots$
If it does, determine the sum.
A. $S_\infty = 2$ C. $S_\infty = 2.48$
B. $S_\infty = 2.5$ D. This series does not have a finite sum.
- _____ 22. Determine the first 4 terms of an infinite geometric series with $t_1 = 5$ and $r = -\frac{2}{5}$.
A. $t_1 = 5; t_2 = -2; t_3 = \frac{4}{5}; t_4 = -\frac{8}{25}$ C. $t_1 = 5; t_2 = -\frac{2}{3}; t_3 = \frac{4}{45}; t_4 = -\frac{8}{675}$
B. $t_1 = -5; t_2 = 2; t_3 = \frac{4}{5}; t_4 = \frac{8}{25}$ D. $t_1 = 5; t_2 = -\frac{25}{2}; t_3 = \frac{125}{4}; t_4 = -\frac{625}{8}$
- _____ 23. An infinite geometric series has $t_1 = -5$ and $r = \frac{3}{5}$. Determine S_∞ .
A. $S_\infty = -5$ C. This series does not have a finite sum.
B. $S_\infty = -12.5$ D. $S_\infty = -8$
- _____ 24. Use an infinite geometric series to express $3.\overline{942}$ as a fraction.
A. $3.\overline{942} = \frac{3910}{990}$ C. $3.\overline{942} = \frac{1971}{500}$
B. $3.\overline{942} = \frac{3903}{990}$ D. $3.\overline{942} = \frac{3885}{990}$

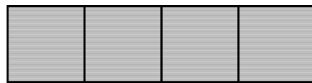
Short Answer

25. Could this sequence be arithmetic?
 $-1, -5, -10, -15, \dots$
26. The sum of the first n terms of an arithmetic series is: $S_n = n^2 - 4n$
Determine the first 4 terms of the series.

27. Determine r , t_5 , and t_6 of this geometric sequence: 3125, 625, 125, 25, ...
28. Calculate the sum of this geometric series: $4 - 8 + 16 - \dots + 16384$
29. Describe the graph of the partial sums of this geometric series: $459 + 153 + 51 + 17 + \frac{17}{3} + \dots$
30. Determine whether this infinite geometric series has a finite sum: $4 + 6.8 + 11.56 + 19.652 + \dots$

Problem

31. A convention centre uses square tables arranged in a single row as shown below. Each square table seats 4 people, but adding another square table adds only 2 more seats. The number of seats for a given number of tables can be represented by an arithmetic sequence.



- a) Determine the first 5 terms of the arithmetic sequence.
- b) How many seats are there if 10 tables are arranged in a single row?
32. Determine the sum of the first 22 terms of each arithmetic series:
- a) $1 + 4 + 7 + 10 + \dots$
- b) $-7 - 11 - 15 - 19 - \dots$
33. The seating chart for a concert hall shows that a section of seats has 10 rows. Tickets in the first section sell for \$95 each. Tickets in each consecutive section are \$6 cheaper than the tickets in the preceding section. The concert hall has 100 rows. Joe wants to buy 1 ticket from each section to give to charity. How much money will he have to spend?
34. a) A geometric sequence has these terms:
 $t_4 = 8, t_5 = 2, t_6 = \frac{1}{2}$
State the common ratio, then write the first 3 terms of the sequence.
- b) Identify the sequence as convergent or divergent. Explain.

Name: _____

ID: A

35. The first term in a geometric sequence is 0.0005. Each term is double the previous term. What is term 25?

36. A car that costs \$38 500 depreciates at a rate of 13.5% per year. A truck that costs \$26 500 depreciates at a rate of 7.0% per year. Suppose both vehicles are purchased on the same day. Which vehicle will be worth more at the end of 10 years?

37. The sum of the first 6 terms of a geometric series is -315 . The common ratio is 2. Determine t_1 .

38. A robotic frog is programmed to make a sequence of jumps, each jump $\frac{1}{4}$ the length of the preceding one. A frog is programmed to jump to a position 12 m away in 12 jumps. Determine the horizontal distance of each of the first 3 jumps. Give your answers to the nearest hundredth of a metre.

39. Create the first 6 terms of a geometric sequence for this description of a graph: the term values and increase in numerical value as more points are plotted.

Name: _____

ID: A

40. a) Without graphing, describe the graph of this geometric sequence:
3, 9, 27, 81, 243, 729, ...
- b) Without graphing, describe the graph of the partial sums of this geometric series:
 $3 + 9 + 27 + 81 + 243 + 729 + \dots$
- c) Verify your descriptions by graphing. Sketch and label each graph on a grid below.

