

Watch. Practice. Understand. | Lesson 122

Chapter 8 Sequences and Series Test Sample Questions

Watch the matching video: https://www.youtube.com/watch?v=wRBgNs4UQ_E

Practice focus: Arithmetic sequences and series

Original extra practice matched to the listed lesson topic.

Name: _____ Date: _____ Show your reasoning and check units.

01 Find term 12 of 5, 8, 11,

02 Find the sum of the first 12 terms of 5, 8, 11,

03 An arithmetic sequence has $a_3 = 10$ and $a_8 = 30$. Find a_1 and d .

04 A theater has 20 seats in row 1 and 2 more per successive row. Find the total in 15 rows.

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Chapter 8 Sequences and Series Test Sample Questions

Watch the matching video: https://www.youtube.com/watch?v=wRBgNs4UQ_E

Practice focus: Geometric sequences and series

Original extra practice matched to the listed lesson topic.

Name: _____ Date: _____ Show your reasoning and check units.

05 Find term 6 of 3, 6, 12,

06 Find the first 6-term sum of 3, 6, 12,

07 Find the infinite sum $12 + 6 + 3 + \dots$.

08 Does $1 - 2 + 4 - 8 + \dots$ converge?

Worked answers | Lesson 122

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Practice focus: Arithmetic sequences and series

Original extra practice matched to the listed lesson topic.

01 Find term 12 of 5, 8, 11,

$$a_n = 5 + 3(n - 1), \text{ so } a_{12} = 38.$$

02 Find the sum of the first 12 terms of 5, 8, 11,

$$S_{12} = 12(5 + 38)/2 = 258.$$

03 An arithmetic sequence has $a_3 = 10$ and $a_8 = 30$. Find a_1 and d .

$$5d = 20 \text{ gives } d = 4; a_1 + 2(4) = 10 \text{ gives } a_1 = 2.$$

04 A theater has 20 seats in row 1 and 2 more per successive row. Find the total in 15 rows.

$$\text{Last row: } 20 + 14(2) = 48. \text{ Total: } 15(20 + 48)/2 = 510 \text{ seats.}$$

Worked answers | Lesson 122

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Practice focus: Geometric sequences and series

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05 Find term 6 of 3, 6, 12,

$$a_n = 3(2)^{(n-1)}, \text{ so } a_6 = 96.$$

06 Find the first 6-term sum of 3, 6, 12,

$$S_6 = 3(2^6 - 1)/(2 - 1) = 189.$$

07 Find the infinite sum $12 + 6 + 3 + \dots$.

$$\text{Ratio } r = 1/2 \text{ has magnitude below } 1. \text{ Sum} = 12/(1 - 1/2) = 24.$$

08 Does $1 - 2 + 4 - 8 + \dots$ converge?

No. The terms do not approach zero; also the geometric ratio has magnitude $2 > 1$.