

Watch. Practice. Understand. | Lesson 121

Algebra II Honors Big Idea Chapter 8 Sequence and Series Part I

Watch the matching video: <https://www.youtube.com/watch?v=vHcltyuKt2s>

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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Watch the matching video: <https://www.youtube.com/watch?v=vHcltyuKt2s>

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 121

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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 121

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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 $2 > 1$.