LESSON MAKER PRO

Series Sum Sprint

Use first terms, last terms, and term counts to find totals.

HIGH SCHOOL · MA.912.AR.10.3

MA.912.AR.10.3 "Recognize and apply the formula for the sum of a finite arithmetic series to solve mathematical and real-world problems."

NAME _____ DATE _____

ADD A FINITE SERIES

For an arithmetic series, use S_n = n/2(a_1 + a_n), where n is the number of terms, a_1 is the first term, and a_n is the last term. If you do not know the last term, find it with a_n = a_1 + (n - 1)d. This formula pairs the first and last terms to find the total efficiently.

WORKED EXAMPLE

Find the sum: 7 + 12 + 17 + 22 + 27

1. There are n = 5 terms.
2. Use S_n = n/2(a_1 + a_n).
3. S_5 = 5/2(7 + 27) = 5/2(34) = 85.

Answer: 85

PRACTICE 6 problems

1 Find the sum: 3 + 6 + 9 + ... + 30

ANSWER _____

2 An arithmetic series has first term 8, common difference 4, and 9 terms. Find its sum.

ANSWER _____

3 Find the sum of the first 11 terms of an arithmetic sequence with first term 2 and common difference 3.

ANSWER _____

4 Find the sum: 14 + 20 + 26 + ... + 74

ANSWER _____

5 An arithmetic series has first term 6, last term 66, and 11 terms. Find its sum.

ANSWER _____

6 Find the sum: 40 + 36 + 32 + ... + 20

ANSWER _____

APPLY IT Show your work

1 A student club sells stickers at 8 school events. It sells 16 stickers at the first event and 6 more stickers at each event after that. How many stickers does the club sell in all?

WORK SPACE

ANSWER _____

2 In a game-design tournament, a player earns 14 points in the first round. The player earns 4 more points than the round before in each new round, for 10 rounds. How many points does the player earn altogether?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

An arithmetic series begins with 10 and has a common difference of 6. Its sum is 248. How many terms are in the series? Show an equation that supports your answer.

_____

_____

ANSWER KEY

Series Sum Sprint

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Find the sum: 3 + 6 + 9 + ... + 30	**165**
2	An arithmetic series has first term 8, common difference 4, and 9 terms. Find its sum.	**216**
3	Find the sum of the first 11 terms of an arithmetic sequence with first term 2 and common difference 3.	**187**
4	Find the sum: 14 + 20 + 26 + ... + 74	**484**
5	An arithmetic series has first term 6, last term 66, and 11 terms. Find its sum.	**396**
6	Find the sum: 40 + 36 + 32 + ... + 20	**180**

PART 2 · APPLY IT

1. **296 stickers** The last event has 58 stickers sold. Use S_8 = 8/2(16 + 58) = 296.
2. **320 points** The tenth-round score is 50 points. Use S_10 = 10/2(14 + 50) = 320.

CHALLENGE

8 terms

Accept equivalent arithmetic-series formulas and correct sums with appropriate units. For the challenge, accept n = 8 with a valid equation such as n/2[20 + 6(n - 1)] = 248.