A2.A.35: Series 1: Determine the sum of the first n terms of an arithmetic or geometric series

1 What is the sum of the first 19 terms of the sequence $3, 10, 17, 24, 31, \ldots$?
1) 1188
2) 1197
3) 1254
4) 1292

2 Determine the sum of the first twenty terms of the sequence whose first five terms are 5, 14, 23, 32, 41.

3 Find the value of $\sum_{n=1}^{5} 2n$.

4 Evaluate $\sum_{k=2}^{5} 4k$

5 Find the value of $\sum_{k=2}^{4} (2k-6)$.

6 Evaluate: $\sum_{k=1}^{3} (2k-1)$

7 Find the value of $\sum_{n=1}^{4} (3n-2)$.

8 Evaluate $\sum_{k=3}^{7} (3k+2)$

9 Evaluate: $\sum_{x=1}^{3} (2x+1)$

10 Evaluate: $\sum_{k=0}^{4} (3k-5)$

11 What is the value of $\sum_{n=1}^{5} (-2n+100)$
1) 70
2) 130
3) 470
4) 530

12 Find the value of $\sum_{x=2}^{4} 3(x+1)$

13 Evaluate: $2\sum_{n=1}^{5} (2n-1)$

14 Evaluate: $\sum_{k=0}^{3} \frac{k}{2}$

15 What is the value of $3\sum_{n=2}^{6} \frac{n}{2}$?
1) 10
2) 13
3) 30
4) 60

16 Evaluate: $\sum_{k=3}^{6} \frac{2k+1}{2}$

17 The projected total annual profits, in dollars, for the Nutyme Clothing Company from 2002 to 2004 can be approximated by the model $\sum_{n=0}^{2} (13,567n+294)$, where n is the year and $n = 0$ represents 2002. Use this model to find the company's projected total annual profits, in dollars, for the period 2002 to 2004.

18 An auditorium has 21 rows of seats. The first row has 18 seats, and each succeeding row has two more seats than the previous row. How many seats are in the auditorium?
1) 540
2) 567
3) 760
4) 798

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Answer Section

1 ANS: 3

$S_n = \frac{n}{2}[2a + (n-1)d] = \frac{19}{2}[2(3) + (19-1)7] = 1254$

REF: 011202a2

2 ANS:

$a_n = 9n - 4$. $S_n = \frac{20(5+176)}{2} = 1810$

$a_1 = 9(1) - 4 = 5$

$a_{20} = 9(20) - 4 = 176$

REF: 011328a2

3 ANS:
30

REF: 069903siii

4 ANS:
56

REF: 069002siii

5 ANS:
0

REF: 088404siii

6 ANS:
9

REF: 089307siii

7 ANS:
22

REF: 019605siii

8 ANS:
85

REF: 089611siii

9 ANS:
15

REF: 060301siii

10 ANS:
5

REF: 080302siii

11 ANS: 3

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

$$s_5 = \frac{5(98 + 90)}{2} = 470$$

REF: 010601b

12 ANS:

36

REF: 088707siii

13 ANS:

50. $s_n = \frac{n(a_1 + a_n)}{2}$. $25 \times 2 = 50$.

$s_5 = \frac{5(1 + 9)}{2} = 25$

REF: 060326b

14 ANS:

3

REF: 060212siii

15 ANS: 3

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

$$s_5 = \frac{5(1 + 3)}{2} = 10$$. $10 \times 3 = 30$.

REF: 011003b

16 ANS:

20

REF: 069408siii

17 ANS:

41,583. $s_n = \frac{n(a_1 + a_n)}{2}$

$s_3 = \frac{3(294 + 27428)}{2} = 41583$.

REF: 060421b

18 ANS: 4

$S_n = \frac{n}{2}[2a + (n-1)d] = \frac{21}{2}[2(18) + (21-1)2] = 798$

REF: 061103a2