Arithmetic sums

6 questions | 13 marks

Equivalent correct methods earn the corresponding marks.

1. Find S_{15} when $a = 3, d = 4$. [2 marks]

$\frac{15[6 + 14(4)]}{2} = 465.$

Answer: $465.$

2. Find $100 + 94 + 88 + \cdots + 4$. [2 marks]

$4 = 100 - 6(n - 1)$ gives $n = 17$; $\frac{17(104)}{2} = 884.$

Answer: $884.$

3. Find the sum of the integers from 23 to 68 inclusive. [2 marks]

There are 46 terms; $\frac{46(23 + 68)}{2} = 2093.$

Answer: $2093.$

4. A 12-term arithmetic series starts at 7 and sums to 282. Find its last term and difference. [2 marks]

$282 = 6(7 + l)$ gives $l = 40$; $\frac{40 - 7}{11} = 3.$

Answer: Last term 40; $d = 3.$

5. A runner begins at 2 km on day 1 and adds 0.5 km each day. Find the distance over 14 days. [2 marks]

$S = \frac{14[4 + 13(0.5)]}{2} = 73.5.$

Answer: 73.5 km.

6. Find positive integer n if $1 + 4 + \cdots + (3n - 2) = 145$. [3 marks]

$\frac{n(3n - 1)}{2} = 145$; $(n - 10)(3n + 29) = 0.$

Answer: $10.$