# Arithmetic sums

6 questions | 13 marks

Equivalent correct methods earn the corresponding marks.

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

$15[6 + 14(4)]/2 = 465$.

**Answer:** 465.

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

$4 = 100 - 6(n - 1)$ gives $n = 17$; $17(104)/2 = 884$.

**Answer:** 884.

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

There are 46 terms; $46(23 + 68)/2 = 2093$.

**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 $l = 40$; $(40 - 7)/11 = 3$.

**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]

$S = 14[4 + 13(0.5)]/2 = 73.5$.

**Answer:** 73.5 km.

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

$n(3n - 1)/2 = 145$; $(n - 10)(3n + 29) = 0$.

**Answer:** 10.