



AUSTRALIAN MATHS TRUST

AMC Challenge
Senior: Years 11–12
Practice Problem

S2: Cherry Buckets

Billy, a seasonal worker in the town of Cowra, collected an even number of buckets of cherries on his first day. Each day after that he increased the number of buckets he picked by 2 buckets per day. In the first 50 days he collected 3250 buckets. The number of buckets Billy collected on the 50th day was

- a. 66 b. 110 c. 114 d. 116 e. 120**

Solution

Alternative 1

Let n be the number of buckets collected on the first day. Then he collected $n + 2$ on the 2nd day, $n + 4$ on the third day, and so on up to $n + 98$ on the 50th day. The sum of this arithmetic progression is

$$\begin{aligned} 3250 &= \frac{50}{2} (n + (n + 98)) \\ &= 50n + 2450 \end{aligned}$$

Then $n = (3250 - 2450) \div 50 = 16$ and $n + 98 = 114$,
Hence (C).

Alternative 2

On average, Billy picked $3250 \div 50 = 65$ buckets per day. His picking rate increased steadily from the 1st day to the 50th day with an increase of 98 buckets overall. So he must have started with $65 - 49 = 16$ buckets and finished with $65 + 49 = 114$ buckets,

Hence (C).