Problem of the Week

Problem E

Stock the Shelves

A local food bank has created a unique 100-day plan for collecting canned food donations.

Day 1 Goal: Collect 50 cans of food.

Day 2 Goal: Collect 3 more cans of food than the current day number plus the same number of cans collected on day 1.

Day 3 Goal: Collect 3 more cans of food than the current day number plus the same number of cans collected on day 2.

Day 4 Goal: Collect 3 more cans of food than the day number plus the same number of cans collected on day 3.

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Day 100 Goal: Collect 3 more cans of food than the day number plus the same number of cans collected on day 99.

How many cans of food will the food bank collect on the 100^{th} day?

NOTE:
In solving this problem, it may be helpful to use the fact that the sum of the first n positive integers is equal to $\frac{n(n+1)}{2}$. That is,

$$1 + 2 + 3 + \cdots + n = \frac{n(n+1)}{2}$$