Let $x_n$ denote the score of the $n$th golfer to finish, so $x_1 = 68$ and $x_2 = 76$. The score for each subsequent golfer is

$$x_n = \frac{1}{n-1} \sum_{j=1}^{n-1} x_j,$$

for every $n \geq 3$.

Claim: $x_n = 72$ for every $n \geq 3$.

Proof. The proof is by induction.

We see that $x_3 = (68 + 76)/2 = 72$.

Now suppose for some $n \geq 3$, $x_n = 72$.

Then

$$x_{n+1} = \frac{1}{n} \sum_{j=1}^{n} x_j = \frac{1}{n} \left( \sum_{j=1}^{n-1} x_j + x_n \right) = \frac{1}{n} \left( (n-1) \frac{\sum_{j=1}^{n-1} x_j}{n-1} + x_n \right)$$

$$= \frac{1}{n} ((n-1)x_n + x_n) = x_n = 72.$$

Therefore $x_n = 72$ for all $n \geq 3$.

In particular the twentieth golfer to finish scored a 72.