



3 Cinnamon Stars

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Challenge

On the table, there are an empty red bowl, an empty black bowl, and 16 cinnamon stars. To pass the time, Ruprecht plays a game. In each move, Ruprecht *either* takes a cinnamon star from the table and puts it into one of the bowls, *or* he takes a cinnamon star from one of the bowls and puts it back on the table. Ruprecht sticks to the following rules:

- At the end of every move, the red bowl contains at least as many cinnamon stars as the black bowl.
- If at the end of a move the red bowl contains exactly R cinnamon stars and the black bowl exactly B cinnamon stars, then Ruprecht is not allowed to have exactly R cinnamon stars in the red bowl and B cinnamon stars in the black bowl at the end of any of the later moves.

What is the maximal number M of moves that Ruprecht can perform under these rules?



Artwork: Friederike Hofmann

Possible answers:

1. The maximal number is $M = 67$.
2. The maximal number is $M = 68$.
3. The maximal number is $M = 69$.
4. The maximal number is $M = 70$.
5. The maximal number is $M = 71$.
6. The maximal number is $M = 72$.
7. The maximal number is $M = 73$.
8. The maximal number is $M = 74$.
9. The maximal number is $M = 75$.
10. The maximal number is $M = 76$.