

Border Line

Jan. 31, 2026 - 3:15am

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It's your first turn in Yahtzee. You roll five standard six-sided dice.

If two outcomes differ only by reordering the dice, we treat them as identical.

Question: How many distinct outcomes are there?



The image shows a digital Yahtzee game interface. At the top, five dice are displayed in a row, showing faces with 1, 2, 2, 4, and 5 dots respectively. Below the dice, the numbers '1-2-2-4-5' are shown in green, followed by a green 'NEW' button. To the right of the numbers is a 'Roll' button. Below this, it says 'Outcomes seen: 4 out of ??' with a 'reset' link. At the bottom, there is a section titled 'Outcomes you've seen:' containing four buttons with the following sequences: '1-1-1-5-6', '1-2-2-4-5', '1-3-4-4-5', and '3-5-5-6-6'.

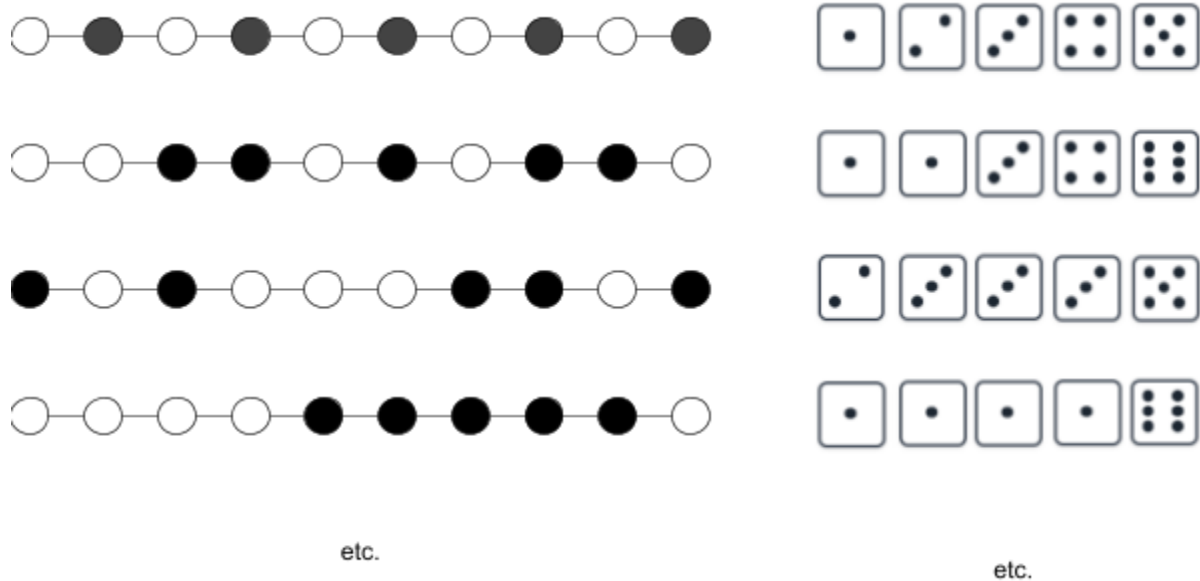
Number of distinct rolls in Yahtzee: _____

Express your answer as an **Integer**.

Solution:

There are **252** possible distinct rolls in Yahtzee.

To see why this is, think about arranging ten marbles and then choosing five of them



In the figure above, the black marbles are the chosen ones, and for each choice of marbles, there exists a unique Yahtzee roll, formed by counting the number of white marbles in between the black ones



There are $(10 \text{ choose } 5) = 252$ possible ways of choosing five marbles from a set of ten. Therefore there are exactly 252 possible Yahtzee rolls.

This is the solution to the puzzle.