1 Lesson 3 Example 5

How many different 8-letter "words" can be formed by rearranging the letters in LALALAAA?

2 Answer

To determine how many different 8-letter "words" can be formed by rearranging the letters in "LALALAAA", we'll use combinations to count the possible arrangements where order does not matter.

1. **Understand the Problem:**

   The word "LALALAAA" consists of 8 letters: 3 Ls and 5 As.

2. **Model the Problem:**

   We need to choose 3 positions out of 8 for the Ls. The remaining positions will automatically be filled with As. This is a combination problem because the order in which we choose the positions for the Ls does not matter.

3. **Calculate the Number of Combinations:**

   The number of ways to choose 3 positions out of 8 for the Ls is given by the combination formula:

   $$\binom{8}{3} = \frac{8!}{3!(8-3)!} = \frac{8!}{3! \cdot 5!}$$

4. **Simplify the Combination:**

   Calculate the factorial values:

   $$\binom{8}{3} = \frac{8 \times 7 \times 6}{3 \times 2 \times 1} = \frac{336}{6} = 56$$

5. **Conclusion:**

   Therefore, the number of different 8-letter "words" that can be formed by rearranging the letters in "LALALAAA" is 56.