

- Three tiles are marked X and two other tiles are marked O. The five tiles are randomly arranged in a row. What is the probability that the arrangement reads XOXOX?

- (A)  $\frac{1}{12}$       (B)  $\frac{1}{10}$       (C)  $\frac{1}{6}$       (D)  $\frac{1}{4}$       (E)  $\frac{1}{3}$

**2005 AMC 10 A, Problem #9— “What is the likelihood that the first spot will**

- **Solution (B)** There are three X's and two O's, and the tiles are selected without replacement, so the probability is

$$\frac{3}{5} \cdot \frac{2}{4} \cdot \frac{2}{3} \cdot \frac{1}{2} \cdot \frac{1}{1} = \frac{1}{10}.$$

OR

The three tiles marked X are equally likely to lie in any of  $\binom{5}{3} = 10$  positions, so the probability of this arrangement is  $1/10$ .

**Difficulty:**

**NCTM Standard:** Problem Solving Standard for Grades 9–12: apply and adapt a variety of appropriate strategies to solve problems.

**Mathworld.com Classification:**

Probability and Statistics > Probability > Probability