2025 Sept AMC 8 Week 2 Day 2 - Number Problems

1 Using the digits $1, 2, 3, 4$ to form three-digit numbers without repeating digits, if one such number is chosen at random, what is the probability that the selected number is a multiple of 3?

A. $\dfrac{1}{4}$ B. $\dfrac{1}{3}$ C. $\dfrac{1}{2}$ D. $\dfrac{3}{4}$ E. $\dfrac{1}{3}$

2 Given the four digits $2, 0, 1, 7$, each digit may be used at most once. How many natural numbers less than 2017 can be formed?

A. 33 B. 35 C. 37 D. 41 E. 45

3 From 3 ones, 2 twos, and 1 three, if 3 digits are selected, how many different three-digit numbers can be formed?

A. 15 B. 16 C. 17 D. 18 E. 19

4 Among the positive integers less than 1000, how many are there with no repeating digit?

A. 648 B. 738 C. 758 D. 828 E. 670

5 Using the digits $1, 2, 3, 4, 5$ to form a five-digit number (each digit used at most once), such that the difference between any two adjacent digits is at least 2. How many such five-digit numbers are there?

A. 10 B. 12 C. 14 D. 16 E. 18