Hybleland L9-Counting I-Basic Rule-Assignment

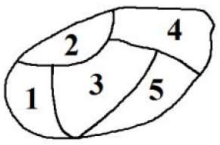
Problem 1. How many 3-digit positive integers can be formed using no zeros and at least one 7?
(A) 210 (B) 217 (C) 219 (D) 220 (E) 230

Problem 2. A restaurant offers five desserts, and exactly three times as many appetizers as main courses. A dinner consists of an appetizer, a main course, and a dessert. What is the least number of main courses that the restaurant can offer so that a customer could have a different dinner each night in the year 2016?
(A) 4 (B) 5 (C) 6 (D) 7 (E) 8

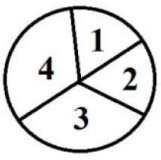
Problem 3. A girl has 5 shirts, 4 skirts, and 3 pairs of shoes. How many different outfits can she create?
(A) 24 (B) 46 (C) 50 (D) 60 (E) 12

Problem 4. A dessert chef prepares the dessert for everyday of a week starting with Thursday. The dessert each day is either cake, biscuits, ice creams, pies, or candies. The same dessert may not be served two days in a row. There must be ice creams on Saturday because of a birthday. How many different dessert menus for the week are possible?
(A) 1024 (B) 2048 (C) 3072 (D) 4096 (E) 2016

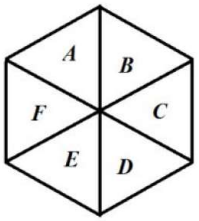
Problem 5. There are five regions to be colored with four different colors. If no same color can be used for adjacent regions, how many ways are there to color?
(A) 24 (B) 48 (C) 72 (D) 96 (E) 16



Problem 6. How many ways to color the 4 regions using 3 different colors, if no two neighboring regions can have the same color?
(A) 12 (B) 48 (C) 18 (D) 72 (E) 16



Problem 7. As shown in the figure, each of six regions *ABCDEF* is to be assigned a color. There are 4 colors to choose from, and no adjacent regions can be the same color. How many different ways are there if each color is allowed to use more than once?
(A) 720 (B) 732 (C) 540 (D) 432 (E) 108



Problem 8. How many different three-digit even positive integers can be made using the digits 1, 2, 3, 4, 5 if no digit can be used more than once in a number?
(A) 24 (B) 28 (C) 72 (D) 86 (E) 48

Problem 9.

AMC10A 2011 / Problem 13

How many even integers are there between 200 and 700 whose digits are all different and come from the set {1,2,5,7,8,9}?

A. 12 B. 20 C. 72 D. 120 E. 200

Problem 10.

AMC10B 2003 / Problem 10

Nebraska, the home of the AMC, changed its license plate scheme. Each old license plate consisted of a letter followed by four digits. Each new license plate consists of three letters followed by three digits. By how many times is the number of possible license plates increased?

A. $\frac{26}{10}$ B. $\frac{26^2}{10^2}$ C. $\frac{26^2}{10}$ D. $\frac{26^3}{10^3}$ E. $\frac{26^3}{10^2}$

Problem 11.

AMC10A 2006 / Problem 21

How many four-digit positive integers have at least one digit that is a 2 or a 3?

A. 2439 B. 4096 C. 4903 D. 4904 E. 5416

Problem 12.

AMC10B 2013 / Problem 18

The number 2013 has the property that its units digit is the sum of its other digits, that is $2+0+1=3$. How many integers less than 2013 but greater than 1000 share this property?

A. 33 B. 34 C. 45 D. 46 E. 58