# Hybleland L9-Counting II-Permutation-Assignment

**Practice 1.**

If the 6 cards shown above are placed in a row so that the card with a A on it is never at either end, how many different arrangements are possible?



$(A)\,2400$      $(B)\,480$      $(C)\,960$      $(D)\,720$      $(E)\,460$

**Practice 2.**

In how many different ways can three students be seated in a row of five chairs?

$(A)\,20$      $(B)\,40$      $(C)\,60$      $(D)\,80$      $(E)\,30$

**Practice 3.**

AMC8 2015 / Problem 4

The Centerville Middle School chess team consists of two boys and three girls. A photographer wants to take a picture of the team to appear in the local newspaper. She decides to have them sit in a row with a boy at each end and the three girls in the middle. How many such arrangements are possible?

A. 2    B. 4    C. 5    D. 6    E. 12

**Practice 4.**

AMC8 2018 / Problem 16

Professor Chang has nine different language books lined up on a bookshelf: two Arabic, three German, and four Spanish. How many ways are there to arrange the nine books on the shelf keeping the Arabic books together and keeping the Spanish books together?

A. 1440    B. 2880    C. 5760    D. 182,440    E. 362,880

**Practice 5.**

SASMO Grade7 - 2020 / Problem 23

Peter has five different books of different subjects to be placed on a single-decked shelf. He does not want to place the Physics book next to the Biology one. In how many ways can he place all his books?

**Practice 6.**

SASMO Grade10 - 2016 / Problem 20

The digits 1,2,3,4 can form 24 four-digit numbers where every digit is used exactly once. If these 24 numbers are arranged in ascending order, what is the position of 3142?

$$\underbrace{1234}_{15t}, \underbrace{1243}_{2nd}, \ldots, \underset{24th}{4321}$$

**Practice 7.**

UKMT-IMC 2015 / Problem 23

There are 120 different ways of arranging the letters, U, K, M, I and C. All of these arrangements are listed in dictionary order, starting with CIKMU. Which position in the list does UKIMC occupy?

A. 110th  B. 112th  C. 114th  D. 116th  E. 118th

**Practice 8. (Challenge)**

SASMO Grade10 - 2020 / Problem 25

Peter has seven different books of different subjects to be placed on a single-decked shelf. He does not want to place the Physics book next to the Biology one and the Geometry book next to the Chemistry one. In how many ways can he place all his books?

**Practice 9.**

AMC8 2004 / Problem 2

How many different four-digit numbers can be formed by rearranging the four digits in 2004?

A. 4   B. 6   C. 16   D. 24   E. 81

**Practice 10.**

SASMO Grade7 - 2016 / Problem 22

In how many different ways can the letters of the word SASMO be arranged so that two S's are next to each other?

**Practice 11.**

In how many different ways can all the letters in INDIANA be arranged in a line? Assume that duplicate letters are indistinguishable.

$(A)$5040          $(B)$2520          $(C)$1260          $(D)$630          $(E)$210

**Practice 12.**

A gardener plants eight trees out of three maple trees, two oak trees, and four birch trees in a row. How many ways are there?

$(A)$1260          $(B)$1240          $(C)$1360          $(D)$1480          $(E)$1630

**Practice 13.**

Seven people are taking a picture in a row including one teacher, two boys and four girls. The teacher must sit in the middle and the two boys must not be next to one another. Find the number of different seating arrangements.

$(A)$120 　　　$(B)$240 　　　$(C)$360 　　　$(D)$480 　　　$(E)$528

**Practice 14.**

How many different ways can seven students be seated in a row of seven seats if there must be exactly two people between Alex and Betsy?

$(A)$820 　　　$(B)$960 　　　$(C)$1210 　　　$(D)$1480 　　　$(E)$1528

**Practice 15.**

Three girls and four boys are standing in a row to take a picture. How many arrangements are there such that boys are neither in leftmost nor the rightmost positions?

$(A)$120 　　　$(B)$240 　　　$(C)$360 　　　$(D)$720 　　　$(E)$520

**Practice 16.**

In how many ways can 8 people be seated at a round table?

**Practice 17.**

In how many ways can a family of six people be seated at a round table if the youngest kid must sit between the parents?

$(A)$240 $\qquad$ $(B)$120 $\qquad$ $(C)$72 $\qquad$ $(D)$36 $\qquad$ $(E)$12

**Practice 18.**

In how many ways can four married couples be seated at a round table if no two men, as well as no husband and wife are to be in adjacent seats?

$(A)$6 $\qquad$ $(B)$12 $\qquad$ $(C)$24 $\qquad$ $(D)$48 $\qquad$ $(E)$96

**Practice 19.**

Ten chairs are evenly spaced around a round table. Five married couples are to sit in the chairs with men and women alternating, and no one is to sit either next to or directly across from his or her spouse. How many seating arrangements are possible?

$(A)$24 $\qquad$ $(B)$36 $\qquad$ $(C)$48 $\qquad$ $(D)$54 $\qquad$ $(E)$72

**Practice 20.**

(AMC) Nine chairs in a row are to be occupied by six students and Professors Alpha, Beta and Gamma. These three professors arrive before the six students and decide to choose their chairs so that each professor will be between two students. In how many ways can Professors Alpha, Beta and Gamma choose their chairs?

$(A)$24 $\qquad$ $(B)$36 $\qquad$ $(C)$60 $\qquad$ $(D)$84 $\qquad$ $(E)$630