⑥ An elevator in a building starts with 5 passengers and stops at seven floors. If every passenger is equally likely to get off at each floor and ~~each~~ all of the passengers leave independently of each other, what is the prob. that no two passengers will get off at the same floor?

$\frac{1}{7}$ $\frac{1}{7}$ $\frac{1}{7}$ $\frac{1}{7}$ $\frac{1}{7}$

7 6 5 4 3

$\frac{7 \cdot 6 \cdot 5 \cdot 4 \cdot 3}{7^5} = \frac{360}{2401}$

⑦ A box contains 24 light bulbs, of which two are defective. If a person selects 10 bulbs at random, without replacement, what is the prob. that both defective bulbs will be selected?

$P = \frac{\binom{2}{2}\binom{22}{8}}{\binom{24}{10}} = P = \frac{\binom{22}{8}}{\binom{24}{10}}$

⑧ There are 4 books on fairy tales, 5 novels and 3 plays. In how many ways can you arrange these so that books on fairy tales are together, novels are together and plays are together and in the order, books on fairy tales, novels and plays.

F=4, N=5, Pl=3 $4! \times 5! \times 3! = 17280$

(1) Each year starts on one of the seven days (Sunday through Saturday). Each year is either a leap year (it includes Feb. 29 or not). How many different calendars are possible for a year?

$2 \cdot 7 = 14$

(2) Three different classes contain 20, 18, and 25 students, respectively, and no student is a member of more than one class. If a team is to be composed of one student from each of these three classes, in how many different ways can the members of the team be chosen?

$20 \times 18 \times 25 = 9000$

~~$_{20}C_3 + {}_{18}C_3 + {}_{25}C_3 =$~~

$$\frac{20!}{(17!)(3!)} + \frac{18!}{(15!)(3!)} + \frac{25!}{(22!)(3!)} = \frac{20 \cdot 19 \cdot 18}{6} + \frac{18 \cdot 17 \cdot 16}{6} + \frac{23 \cdot 24 \cdot 23}{6}$$

$$= 7940 + 4896 + 13800 + 2024 = 4256$$

6 5 4 3

(3) If four dice are rolled, what is the prob. that each of the ~~six diff. numbers will appear exactly once?~~ four numbers will be different?

$\frac{6 \cdot 5 \cdot 4 \cdot 3}{6^4} = \frac{5}{18}$

(4) If six dice are rolled, what is the prob of the six diff numbers will appear exactly once?

$\frac{6!}{6^6}$

(5)