ex.28) How many arrangements can be made of the letters of the word (Mississippi), taken all together?

sol/ since ther are. $m = 1$, $i = 4$, $s = 4$, $p = 2$

and the total of letters is 11, then.

$$\frac{n!}{n_1!\, n_2!\, n_3! \dots n_k!} = \frac{11!}{1!\, 4!\, 4!\, 2!} = \boxed{34650}$$

How many arrangment. can be made of the letters of the words statistics taken all together

statistics / عدد الترتيب المختلفة التي يمكن تكوينها من حروف كلمة statistics اذا اخذت جميعاً.

الكلمة تحتوي على. $s = 3$, $t = 3$, $i = 2$, $a = 1$, $c = 1$ وبذلك فان $K = 5$ و $n_1 = 3$, $n_2 = 3$, $n_3 = 2$, $n_4 = 1$, $n_5 = 1$

$$n_1 + n_2 + n_3 + n_4 + n_5 = 3 + 3 + 2 + 1 + 1 = \boxed{10}$$

وعلى هذا الاساس فان عدد الترتيب

$$\frac{n!}{n_1!\, n_2!\, n_3!\, n_4!\, n_5!} = \frac{10!}{3!\, 3!\, 2!\, 1!\, 1!} = \frac{10 \times 9 \times 8 \times 7 \times 6 \times 5 \times 4 \times 3!}{3! \times 3 \times 2 \times 1 \times 2 \times 1 \times 1}$$

$$= \boxed{50400}$$

عدد الترتيب او الطرق.

ex. use world · Baghdeed.

(1) (2)

(1025)

(3)

C.27: How many 4 digits numbers can be formed from the digit numbers 1, 2, 3, 4 ·?. repition is not allowed.

1st method.

4	3	2	1

$4 * 3 * 2 * 1 = 24$

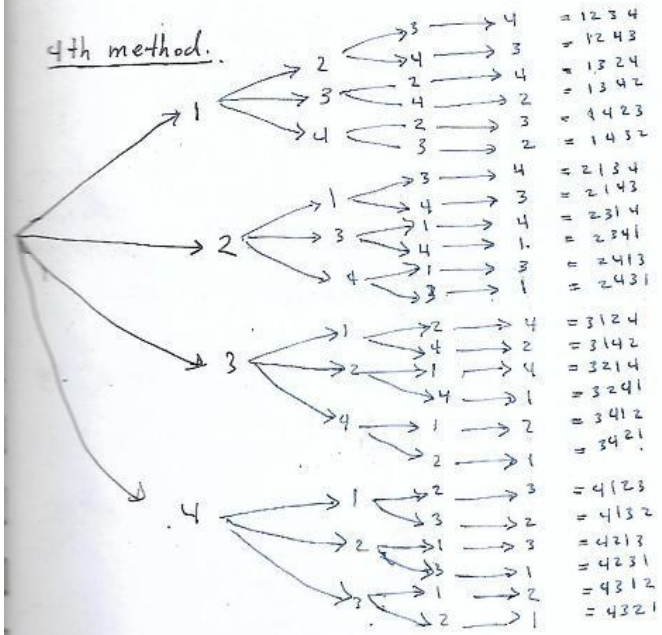
2nd method.

$n! = 4! = 4 * 3 * 2 * 1 = \boxed{24}$

3rd method.

$$P_r^n = P_4^4 = \frac{4!}{(4-4)!} = \frac{4!}{0!} = \frac{4!}{1} = 4 * 3 * 2 * 1 = \boxed{24}$$

4th method.



with replacement.? (How)

Ex

In How many ways can three Books denoted by, A, B and C

(i) be arranged in order on a shelf ?

(ii) be arranged only 2 letters ?

(iii) with replecment.

(iv) with respect 2 only letters with replecment.

(i) ① arranged. method

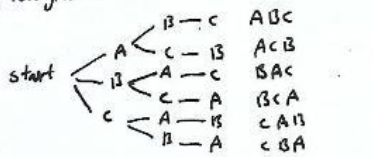
1	2	3
3	2	1

$3 * 2 * 1 = \boxed{6}$ ways.

② $P^n_n = P^3_3 = 3! = 3 * 2 * 1 = \boxed{6}$ ways

or $P^n_n = n! = 3! = \boxed{6}$

③ Tree Diagram.



عدد الطرق = 6

(ii) ① Arrangement method.

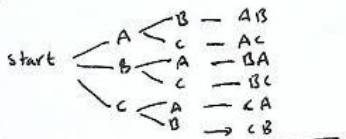
1	2
3	2

$3 * 2 = \boxed{6 \text{ ways}}$

② permutation

$$P^n_r = \frac{n!}{(n-r)!} \Rightarrow P^3_2 = \frac{3!}{(3-2)!} = \frac{3!}{1!} = 3*2*1 = 6 \text{ ways}$$

③ Tree Diagram



عدد الطرق = 6

ex.26 How many 2digit number can be formed from the seven digit numbers? If repitions is not allowed.
(1,2,3,4,5,6,7) with replacement

Sol: 1st method

7	6

$7 * 6 = 42$ ways.

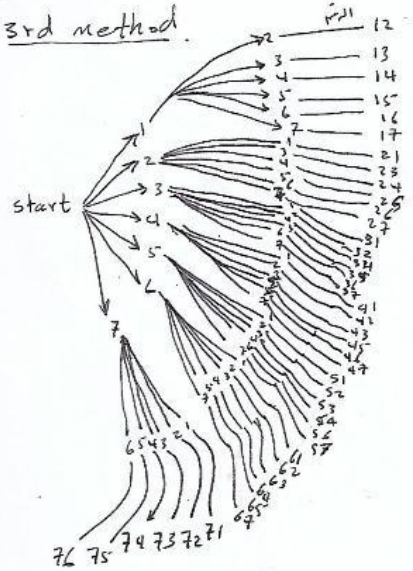
2nd method.

$n = 7$

$r = 2$.

$$\Rightarrow {}^{7}P_{2} = \frac{7!}{(n-r)!} = \frac{7!}{(7-2)!} = \frac{7!}{5!} = \frac{7*6*5!}{5!} = \boxed{42}$$

3rd method.



الطرق المستخدمة:
1st - طريقة الترتيب Arrangement
2nd - طريقة التباديل Permutation
3rd - طريقة شجرة الاحتمال Tree Diagram