

1.— A person has three shirts, four trousers, and six pairs of shoes. In how many different ways can you dress using one of each type of item?

2.— How many different pools of 15 matches can you cover?

3.— Using the digits 9, 7, 5, 3, 1, how many different three-digit numbers can be formed?

4.— In how many different ways can eight people sit in a row of seats?

5.— In how many different ways can the letters of PARALLELEPIPED be rearranged?

6.— Compute:

$$\binom{6}{2}, \binom{7}{3}, \binom{222}{0}, \binom{200}{199}.$$

7.— Expand $(x + 1)^7$.

8.— In how many different ways can a committee of five people be chosen from a group of 20.

9.— In a winery there are five different types of bottles. In how many ways can four bottles be chosen?

Soluciones.

1. $3 \cdot 4 \cdot 6 = 72$

2. $VR_{3,15} = 3^{15} = 14348907.$

3. $V_{5,3} = \frac{5!}{(5-3)!} = 5 \cdot 4 \cdot 3 = 60.$

4. $P_8 = 8! = 8 \cdot 7 \cdot 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1 = 40320.$

5. $PR_{14;3,3,3,2} = \frac{14!}{3!3!3!2!} = 201801600.$

6. $\binom{6}{2} = \frac{6 \cdot 5}{1 \cdot 2} = 15.$

$$\binom{7}{3} = \frac{7 \cdot 6 \cdot 5}{1 \cdot 2 \cdot 3} = 35.$$

$$\binom{222}{0} = 1.$$

$$\binom{200}{199} = \binom{200}{200-199} = \binom{200}{1} = 200.$$

7. $(x + 1)^7 = \binom{7}{0}x^7 + \binom{7}{1}x^6 + \binom{7}{2}x^5 + \binom{7}{3}x^4 + \binom{7}{4}x^3 + \binom{7}{5}x^2 + \binom{7}{6}x + \binom{7}{7} =$
 $= x^7 + 7x^6 + 21x^5 + 35x^4 + 35x^3 + 21x^2 + 7x + 1$

8. $C_{20,5} = \binom{20}{5} = 15504.$

9. $CR_{5,4} = \binom{5+4-1}{4} = 70.$