

COEFICIENTES BINOMIAIS/TRIÂNGULO DE PASCAL E TARTAGLIA

Coefficientes binomiais

01

$$\binom{8}{3} = \frac{8!}{3!(8-3)!} = \frac{8!}{3!5!} = \frac{\cancel{8!} \cdot 336}{3! \cdot \cancel{5!}}$$

$$\frac{336}{6} = 56$$

Setra B

02

$$\binom{200}{198} = \frac{200!}{198!(200-198)!} = \frac{\cancel{200!} \cdot 199 \cdot 200}{\cancel{198!} \cdot 2!}$$

$$199 \cdot 200 = 39800$$

$$\frac{39800}{2} = 19900$$

Setra A

③ $\left(\frac{n-1}{2}\right) = \left(\frac{n+1}{4}\right)$ numeradores diferentes,
apenas verdade se
resultado = 0 ou 1.

$$\begin{array}{l} n-1 \leq 2 \\ n \leq 3 \end{array}$$

$$\{ \dots 0, 1, 2, 3 \} - (\mathbb{Z} - \mathbb{N})$$

$$\begin{array}{l} n+1 \leq 4 \\ n \leq 3 \end{array}$$

$$\{ 0, 1, 2, 3 \}$$

↓
0 não convém pois
 $0-1 \leq 0$

$$V = \{ 1, 2, 3 \}$$

04

$$\binom{20}{13} + \binom{20}{14}$$

$$\binom{n}{k} + \binom{n}{k+1} = \binom{n+1}{k+1}$$

$$\binom{20}{13} + \binom{20}{14} = \binom{21}{14}$$

$$\binom{n}{k} \bullet = \binom{n}{n-k} \quad \left| \quad \frac{21}{14} = \frac{21}{21-14} = \binom{21}{7} \right.$$

Setra C

05

$$\binom{n}{0} + \binom{n}{1} + \binom{n}{2} + \dots + \binom{n}{n} ?$$

Soma ~~de~~ ~~com~~ com ~~o~~ linha constante
é determinada pela fórmula 2^n , onde
 n representa o número da linha.

2^n

⑥

$$a) \sum_{p=0}^{10} \binom{10}{p}$$

na linha

$$\text{Soma } \text{[scribble]} = 2^n$$

$$n = \text{[scribble]} 10$$

$$2^{10} = \{1024\}$$

$$b) \sum_{p=0}^9 \binom{10}{p}$$

na linha
Soma ~~na linha~~ = 2^n

$$n = 10$$

$$2^{10} = 1024$$

$$1024 - \binom{10}{0} = 1023$$

$$c) \sum_{p=2}^9 \binom{9}{p}$$

na linha
~~Soma~~ ~~na linha~~ = 2^n

$$n = 9$$

$$2^9 = 512$$

$$512 - \binom{9}{0} - \binom{9}{1} = 502$$

$$d) \sum_{p=4}^{10} \binom{p}{4}$$

na coluna
Soma ~~na coluna~~ = $\binom{n+1}{p+1}$

$$\sum_{p=4}^{10} \binom{p}{4} = \binom{11}{5}$$

$$\frac{11!}{5!(11-5)!} = \frac{6! \cdot 55440}{5! \cdot 6!} = \frac{55440}{120}$$

↓
462

$$e) \sum_{p=5}^{10} \binom{p}{5}$$

Soma ~~na coluna~~ $= \binom{n+1}{p+1}$

$$\sum_{p=5}^{10} \binom{p}{5} = \binom{11}{6}$$

~~+~~ $\binom{11}{6} = \binom{11}{5}$

~~+~~ $\binom{11}{6} = 462$

7

$$\sum_{k=0}^m \binom{m}{k} = 512$$

Soma ~~na linha~~ $= 2^m$

$$2^m = 512$$

$$2^m = 2^9$$

$$m = 9$$

Letra E