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Tarefa Básica - Coeficientes Binomiais e Triângulo de Pascal e Tartaglia

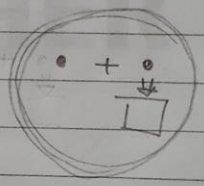
01 $\binom{8}{3} = \frac{8!}{3!(8-3)!} = \frac{8!}{3!5!} = \frac{8.7.6.5!}{3!5!} = \frac{336}{6} = 56$ Letra B

02. $\binom{200}{198} = \frac{200!}{198!(200-198)!} = \frac{200.199.198!}{198!.2!} = \frac{39\,800}{2} = 19\,900$ Letra A

03. $\binom{n-1}{2} = \binom{n+1}{4}$ $n-1 \geq 2$ $n+1 \geq 4$

$n \geq 3$ $n \geq 3$

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



05. $\binom{n}{0} + \binom{n}{1} + \binom{n}{2} + \dots + \binom{n}{n} = 2^n$

soma da linha n

06.

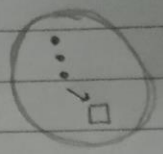
a) $\sum_{p=0}^{10} \binom{10}{p} = \binom{10}{0} + \binom{10}{1} + \dots \binom{10}{10} = 2^{10} = 1024$

b) $\sum_{p=0}^{9} \binom{10}{p} = \binom{10}{0} + \binom{10}{1} + \dots \binom{10}{9} = 2^{10} - \binom{10}{10} = 1024 - 1 = 1023$

c) $\sum_{p=2}^{9} \binom{9}{p} = \binom{9}{2} + \binom{9}{3} + \cdots + \binom{9}{9} = 2^9 - \binom{9}{0} - \binom{9}{1}$

$= 512 - 1 - 9 = 502!$

d) $\sum_{p=4}^{10} \binom{p}{4} = \binom{4}{4} + \binom{5}{4} + \cdots + \binom{10}{4} = \binom{11}{5} =$



soma da coluna 4

$\binom{11}{5} = \frac{11!}{5!(11-5)!} = \frac{11.10.9.8.7.6!}{5!.6!} = \frac{55\,440}{120} = 462!$

e) $\sum_{p=5}^{10} \binom{p}{5} = \binom{5}{5} + \binom{6}{5} + \cdots + \binom{10}{5} = \binom{11}{6}$

$\binom{11}{6} = \frac{11!}{6!(11-6)!} = \frac{11.10.9.8.7.6!}{6!.5!} = 462!$

$\underbrace{\binom{11}{5} = \binom{11}{6}}_{\text{complementares}}$ $5+6=11$

07. $\sum_{K=0}^{m} \binom{m}{K} = 512 \Rightarrow \binom{m}{0} + \binom{m}{1} + \cdots + \binom{m}{m} = 2^m$

$2^m = 512$

$2^m = 2^9$

$m = 9$ Letra E!