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Sala: CTII 317

$$1) \binom{8}{3} = \frac{8!}{3!(8-3)!} = \frac{8!}{3!5!}$$
$$\frac{8 \cdot 7 \cdot 6 \cdot \cancel{5!}}{3 \cdot 2 \cdot \cancel{1!} \cdot \cancel{5!}} = \frac{336}{6} = 56$$

letra B

spira

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

$$\frac{200}{198! \cdot 2!} = \frac{200 \cdot 199 \cdot \cancel{198!}}{\cancel{198!} \cdot 2!}$$

$$\frac{39800}{2} = 19.900 \text{ letra A}$$

$$3) \binom{n-1}{2} = \binom{n+1}{4}$$

$$4(n-1) = 2(n+1)$$

$$4n - 4 = 2n + 2$$

$$4n - 2n = 2 + 4$$

$$2n = 6$$

$$n = \frac{6}{2} = 3 \quad \checkmark$$

$$4) \begin{pmatrix} 20 \\ 13 \end{pmatrix} + \begin{pmatrix} 20 \\ 14 \end{pmatrix} = \begin{pmatrix} 21 \\ 7 \end{pmatrix}$$

2 consecutivos +: ↓
letra C

6)

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

$$2^{10} = 1024$$

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

$$p=0 \quad \text{linha } 10 - \left(\frac{10}{10}\right) = 2^{10} - 1 = 1023$$

$$c) \quad \sum_{p=1}^9 \binom{9}{p} = \binom{9}{2} + \binom{9}{3} + \dots$$

$$p=2 \quad \binom{9}{9}$$

$$\text{linha } 9 - \binom{9}{0} - \binom{9}{1} = 2^9 - 1 - 9$$

$$2^9 - 10$$

$$512 - 10 = 502$$

$$7) \quad \sum_{k=0}^m \binom{m}{k} = 512$$

$$k=0$$

$$\binom{m}{0} + \binom{m}{1} + \dots + \binom{m}{m}$$

$$2^m = 512$$

$$2^9 = 512$$

$$2^m = 2^9$$

$$m = 9$$