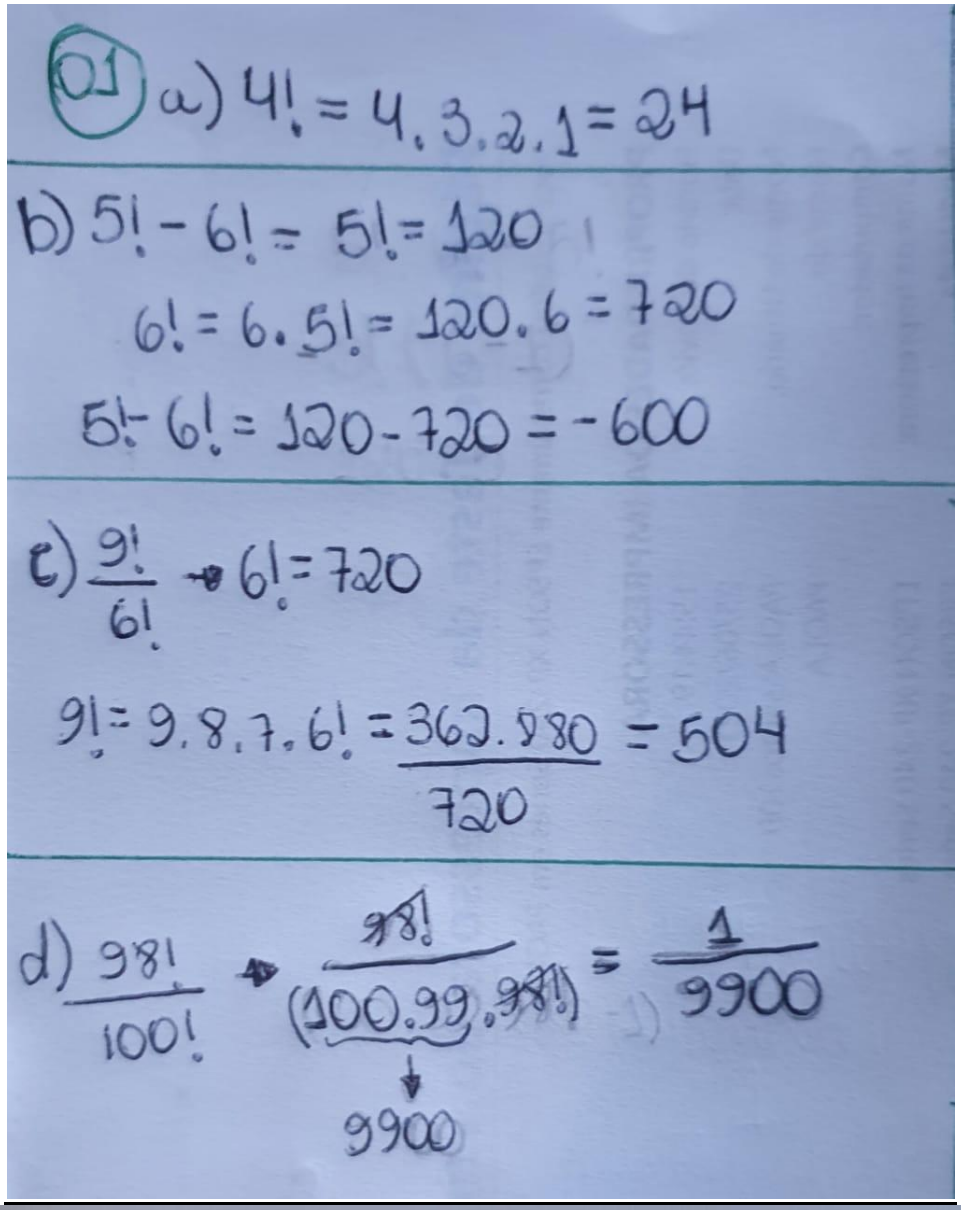
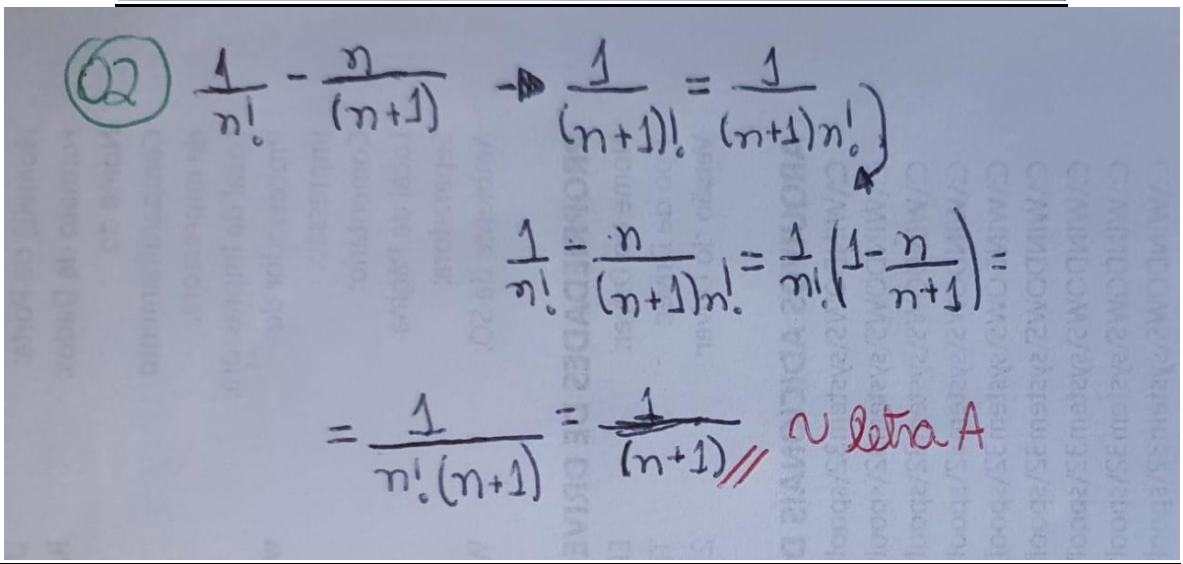
Nome: Paola Martins da Silva_____ - **CTII 317** – **DATA:** 01/07/21

TAREFA BÁSICA 8

FATORIAL DE UM NÚMERO NATURAL





(03) $\frac{(n!)^2 - (n-1)n!}{(n-1)!.n!}$ → o mesmo que $\frac{n!.n! - (n-1)n!}{(n-1)n!}$ ⇒

anulando... ⇒ $\frac{n! - (n-1)}{(n-1)}$ ⇒ $\frac{n.(n-1)! - (n-1)!}{(n-1)}$ → cortando... $\frac{n-1}{1}$ ou seja $\boxed{n-1}$ // ~ letra A

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(04) $\frac{(n+2)!.(n-2)!}{(n+1)!.(n-1)!} = 4$

$\frac{(n+2).\cancel{(n+1)}}{\cancel{(n+1)}} \cdot \frac{\cancel{(n-2)}}{(n-1).\cancel{(n-2)}} = 4$

Cortando os termos, teremos:

$\frac{(n+2)}{(n-1)} = 4$ → $(n+2) = 4(n+1)$

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

$4n - n = 2 + 4$

$3n = 6$

$n = \frac{6}{3}$ → $n = 2$ // ou seja, $\boxed{\text{par}}$ ~ letra A

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(05) $\frac{(n+1)!.n!}{(n+1)!} = \frac{7}{n+1}$ →

→ $\frac{(n+1).n! - n!}{(n+1).n!} = \frac{7}{n+1}$ →

→ $\frac{\cancel{n!}(n+1-1)}{(n+1)\cancel{n!}} = \frac{7}{n+1}$

$\frac{n+1-1}{n+1} = \frac{7}{n+1}$ → $\frac{n}{n+1} = \frac{7}{n+1}$

→ $\boxed{n = 7}$ // ~ letra D

06) $(n-1)!\,[(n+1)!-n!]$

colocar em evidência:

$(n-1)!\,[(n+1)n!-n!]$

o "n" em evidência dentro dos colchetes:

$(n-1)!\,[n!(n+1-1)] =$

$= (n-1)!\,(n!\,n) = [n(n-1)!]\,[n!] =$

$= (n!)\,(n!) = (n!)^2$ ~ letra D

07) $\dfrac{n!+(n-1)!}{(n+1)!-n!} = \dfrac{6}{25}$

colocar em evidência:

$\dfrac{n(n-1)!+(n-1)!}{(n+1)n!-n!} = \dfrac{6}{25}$

$\dfrac{(n-1)!\,[n+1]}{n!\,[(x+1)-1]} = \dfrac{6}{25}$

$\dfrac{(n-1)!\,[n+1]}{n(n-1)!\,[(n+1)-1]} = \dfrac{6}{25}$

logo:

$\dfrac{n+1}{n^2} \not= \dfrac{6}{25} \rightarrow 6n^2 = 25(n+1)$

$6n^2 = 25n + 25 \rightarrow 6n^2 - 25n - 25 = 0 \rightarrow$

$\rightarrow \Delta = (-25)^2 - 4.6.(-25)$

$\Delta = 625 + 600$

$\Delta = 1225$

$n = \dfrac{25 \pm \sqrt{1225}}{2.6}$

$n = \dfrac{25 \pm 35}{12}$

$n' = \dfrac{25+35}{12} = \dfrac{60}{12} = 5$

$n'' = \dfrac{25-35}{12} = \dfrac{-10}{12}$

R: 5 ~ letra C