IS I Ü2

2) Basketball 10 throws each $p_T = 0{,}8$ $p_J = 0{,}85$ ... probability of success for Toni / John

a) $\mathbb{P}(X_T = 7) = \binom{10}{7} p_T^{\,7} (1-p_T)^3 =$

$= 120 \cdot 0{,}8^7 \cdot 0{,}2^3 = 0{,}2013$

b) $\mathbb{P}(X_J \geq 8) = \sum_{K=8}^{10} \binom{10}{k} p_J^{\,k} (1-p_J)^{10-k} =$

$= \binom{10}{8} \cdot 0{,}85^8 \cdot 0{,}15^2 + \binom{10}{9} \cdot 0{,}85^9 \cdot 0{,}15^1 + \binom{10}{10} \cdot 0{,}85^{10} \cdot 0{,}15^0$

$= 0{,}275897 + 0{,}347425 + 0{,}196874$

$= 0{,}8201960$

c) $\mathbb{P}(X_T > X_J) = \sum_{K=1}^{10} \mathbb{P}(X_T = k) \cdot \mathbb{P}(X_J < k-1)$

$= \sum_{K=1}^{10} \binom{10}{k} p_T^{\,k} (1-p_T)^{10-k} \left(1 - \sum_{\ell=K}^{10} \binom{10}{\ell} p_J^{\,\ell} (1-p_J)^{10-\ell}\right)$

$= 0{,}2738$ calculated with WolframAlpha