2.63

$k \geq 1 \qquad 1 \leq \frac{T_{k0}}{T_9} = \frac{\binom{n}{9}\left(\frac{x}{5}\right)^{n-9}\left(\frac{2}{5}\right)^{9}}{\binom{n}{8}\left(\frac{x}{5}\right)^{n-8}\left(\frac{2}{5}\right)^{8}} = \frac{\frac{n!}{9!(n-9)!}\cdot\frac{\cdot 2^9}{5^n}}{\frac{n!}{8!(n-8)!}\cdot\frac{\cdot 2^8}{5^n}} = \frac{(n-8)\,2}{10}$

$5 \leq \quad n-8 \rightarrow \boxed{n=13}$