$$P_c = \frac{\sum_{n=1}^{100} n \frac{P(n, A_u \rho)}{A_\sigma \frac{n-1}{A_p} + 1}}{\sum_{n=1}^{100} n P(n, A_u \rho)} = \frac{\sum_{n=1}^{100} n \frac{P(n, A_u \rho)}{A_\sigma \frac{n-1}{A_p} + 1}}{A_u \rho}$$