LÖSUNG ZU 859:

X = Anzahl der Fünfer

a)
p = $\frac{1}{6}$ n = 24

$\mu = n \cdot p = 24 \cdot \frac{1}{6} = 4$

$\sigma^2 = n \cdot p \cdot (1-p) = 24 \cdot \frac{1}{6} \cdot \frac{5}{6} \approx 3{,}33$ → $\sigma \approx 1{,}83$

b)
$P(\mu - \sigma < X < \mu + \sigma) = P(3 \leq X \leq 5) = \binom{24}{3} \cdot \left(\frac{1}{6}\right)^3 \cdot \left(\frac{5}{6}\right)^{21} + \binom{24}{4} \cdot \left(\frac{1}{6}\right)^4 \cdot \left(\frac{5}{6}\right)^{20} + \binom{24}{5} \cdot \left(\frac{1}{6}\right)^5 \cdot \left(\frac{5}{6}\right)^{19} \approx 0{,}5886$

c)
$P(X < \mu - \sigma) = P(X \leq 2) = \binom{24}{0} \cdot \left(\frac{1}{6}\right)^0 \cdot \left(\frac{5}{6}\right)^{24} + \binom{24}{1} \cdot \left(\frac{1}{6}\right)^1 \cdot \left(\frac{5}{6}\right)^{23} + \binom{24}{2} \cdot \left(\frac{1}{6}\right)^2 \cdot \left(\frac{5}{6}\right)^{22} \approx 0{,}2118$