

$\frac{11}{1400}$ ⑤ $p(8/7) = p(7 \text{ successes} \cap 8 \text{ trials}) + p(8 \text{ successes} \cap 8 \text{ trials}) = \frac{1}{5} \cdot \frac{3}{4} + \frac{2}{3} \cdot \frac{6}{10} = \frac{13}{20}$

$p(13/3) = \frac{p(3)}{p(3) + p(4)} = \frac{\binom{4}{3} \left(\frac{13}{20}\right)^3 \left(\frac{7}{20}\right)}{\binom{4}{3} \left(\frac{13}{20}\right)^3 \left(\frac{7}{20}\right) + \binom{4}{4} \left(\frac{13}{20}\right)^4} = 0.6829$

⑥ $p(13/3) = \frac{p(3)}{p(3) + p(4)} = \frac{\binom{4}{3} \left(\frac{6}{10}\right)^3 \left(\frac{4}{10}\right)}{\binom{4}{3} \left(\frac{6}{10}\right)^3 \left(\frac{4}{10}\right) + \binom{4}{4} \left(\frac{6}{10}\right)^4} = 0.72727$

$\frac{12}{1400}$ $p(10 \cap 2) = 0.8 \cdot 0.7 = 0.56$ $p(10 \cap 10) = 0.56 \cdot \frac{3}{4} = 0.42$

$p(4) = \binom{6}{4} 0.42^4 \cdot 0.58^2 = 0.157$

$\frac{13}{1400}$ ① $p(20) = p(20, 0) + p(0, 20) + p(10, 10) = \frac{1}{4} \cdot \frac{5}{12} + \frac{5}{12} \cdot \frac{1}{4} + \frac{1}{8} \cdot \frac{1}{8} = \frac{23}{72}$

② $p(1) = \binom{4}{1} \left(\frac{23}{72}\right) \left(\frac{49}{72}\right)^3 = 0.402759$

③ $p(113/20) = \frac{p(20)}{p(113/20)} = \frac{\binom{4}{1} \left(\frac{23}{72}\right)^4}{\binom{4}{1} \left(\frac{49}{72}\right)^4} = 0.11495$

$p(113/20) = p(20) + p(10, 20) + p(20, 10) + p(20, 20) = \frac{23}{72} + \frac{1}{8} \cdot \frac{1}{4} + \frac{1}{4} \cdot \frac{1}{8} + \frac{1}{4} \cdot \frac{1}{4} = \frac{39}{144}$

$\frac{14}{1400}$ ① $p(3) = \binom{4}{3} \left(\frac{15}{21} \cdot \frac{14}{20}\right)^3 \left(1 - \frac{15}{21} \cdot \frac{14}{20}\right) = 0.25$

② $p(13/3) = \frac{p(3)}{p(3) + p(4)} = \frac{0.25}{0.25 + \binom{4}{4} \left(\frac{15}{21} \cdot \frac{14}{20}\right)^4} = 0.8$

$\frac{15}{1400}$ ① $p(1/1) = p(1/1) + p(1/1) = \binom{3}{3} 0.5^3 + \binom{3}{3} 0.5^3 = 0.25$

② $p(4) = \binom{5}{4} (0.5)^3 (1 - 0.5^3) = \frac{35}{3268}$

$\frac{16}{1400}$ $p(2/1) = \binom{3}{2} \left(\frac{1}{4}\right)^2 \left(\frac{3}{4}\right) = \frac{9}{64}$

$p(1/1) = 1 - p(2/1) = 1 - \binom{4}{4} \left(1 - \frac{9}{64}\right)^4 = 0.4558$