

1. (1373) ① $\binom{8}{3} = 56$ ② $\binom{6}{2} = 15$ ③ $\binom{7}{5} = 21$ ④ $\binom{4}{1} = 4$ ⑤ $\binom{9}{9} = 1$ ⑥ $\binom{7}{0} = 1$

2. (1373) ① $p(\text{הצלחה}) = \binom{4}{3} 0.8^3 0.2^1 = 0.4096$ ② $p(\text{הכרעה}) = \binom{4}{1} 0.8^1 0.2^3 = 0.0256$
 ③ $p(\text{הצלחה}) = \binom{4}{2} 0.8^2 0.2^2 = 0.1536$

3. (1373) ① $p(3) = \binom{3}{3} 0.6^3 = 0.216$ ② $p(2) = \binom{3}{2} 0.6^2 0.4^1 = 0.432$
 ③ $p(1) = \binom{3}{1} 0.6^1 0.4^2 = 0.288$ ④ $p(0) = \binom{3}{0} 0.6^0 0.4^3 = 0.064$ ⑤ $1 + 2 + 8 + 3 = 1$

4. (1373) ① $p(4) = \binom{4}{4} 0.7^4 = 0.2401$ ② $p(3) = \binom{4}{3} 0.7^3 0.3^1 = 0.4116$ ③ $p(\text{הצלחה}) = p(3) + p(4) = 1 + 2 = 0.6517$

5. (1373) $p(5) = \binom{6}{5} 0.9^5 0.1^1 = 0.354294$
 $p(6) = \binom{6}{6} 0.9^6 = 0.531441$ } $p(\text{הצלחה}) = p(5) + p(6) = 0.885735$

6. (1373) $p(\text{הצלחה}) = p(1) + p(0) = \binom{5}{1} 0.3^1 0.7^4 + \binom{5}{0} 0.3^0 0.7^5 = 0.52822$

7. (1373) ① $p(\text{הצלחה}) = p(6) + p(7) + p(8) = \binom{8}{6} 0.7^6 0.3^2 + \binom{8}{7} 0.7^7 0.3^1 + \binom{8}{8} 0.7^8 = 0.55171$
 ② $p(\text{הצלחה}) = p(2) + p(1) + p(0) = \binom{8}{2} 0.7^2 0.3^6 + \binom{8}{1} 0.7^1 0.3^7 + \binom{8}{0} 0.3^8 = 0.1129$

8. (1374) ① $p(0) = \binom{4}{0} 0.2^4 = 0.016$ ② $p(\text{הכרעה}) = 1 - p(0) = 1 - 0.016 = 0.984$

9. (1374) ① $p(\text{הכרעה}) = 1 - p(0) = 1 - \binom{4}{0} \left(\frac{1}{2}\right)^4 = \frac{255}{256}$ ② $p(\text{הכרעה}) = 1 - p(4) = 1 - \binom{4}{4} \left(\frac{3}{4}\right)^4 = \frac{175}{256}$

10. (1374) ① $p(\text{הצלחה}) = \binom{5}{3} 0.2^3 0.8^2 = 0.0512$ ② $p(0) = \binom{5}{0} 0.2^5 = 0.00032$

③ $p(\text{הכרעה}) = 1 - p(0) = 1 - 0.00032 = 0.99968$

11. (1374) ① $p(1) = \binom{10}{1} \left(\frac{1}{4}\right)^1 \left(\frac{3}{4}\right)^9 = 0.1875$ ② $p(\text{הצלחה}) = p(0) + p(1) + p(2) + p(3) + \dots = 0.75875$

③ $p(\text{הכרעה}) = p(5) + p(6) + p(7) + p(8) + p(9) + p(10) = 1 - \frac{p(0)}{2} - p(4) = 0.078126998$

12. (1374) ① $p(\text{הצלחה}) = \binom{5}{3} \left(\frac{2}{3}\right)^3 \left(\frac{1}{3}\right)^2 = \frac{80}{243}$ ② $p(\text{הכרעה}) = \binom{5}{4} \left(\frac{2}{3}\right)^4 \left(\frac{1}{3}\right)^1 = \frac{10}{243}$

13. (1374) ① $p(5) = \binom{8}{5} 0.6^5 0.3^3 = 0.2805$ ② $p(5) = 0.2805$

14. (1374) ① $p(5) = \binom{5}{5} 0.8^5 = 0.32768$ ② $p(0) = \binom{5}{0} 0.2^5 = 0.00032$

③ $p(\text{הכרעה}) = 1 - p(5) - p(0) = 1 - 0.32768 - 0.00032 = 0.672$