

Chapter 10 Review

- I. (a) 540
 (b) 33,554,432
 (c) (i) 1296 (ii) $\frac{1}{1296}$ (iii) at least 9 digits long

- II. (a) 2730
 (b) $14! \approx 87,178,291,200$
 (c) $\frac{16!}{4!2!2!2!} \approx 108,972,864,000$
 (d) 42000
 (e) ≈ 0.3151

- III. (a) (i) $P(A) = \frac{5}{18}, P(B) = \frac{1}{2}, P(A \& B) = \frac{1}{9}$
 inclusive, $P(A \text{ or } B) = \frac{2}{3}$, dependent
 (ii) $P(A) = \frac{1}{6}, P(B) = \frac{1}{2}, P(A \& B) = \frac{1}{6}$
 inclusive, $P(A \text{ or } B) = \frac{1}{2}$, dependent
 (iii) $P(A) = \frac{1}{12}, P(B) = \frac{5}{18}, P(A \& B) = 0$
 exclusive, $P(A \text{ or } B) = \frac{13}{36}$, dependent
 (iv) $P(A) = \frac{1}{3}, P(B) = \frac{1}{2}, P(A \& B) = \frac{1}{6}$
 inclusive, $P(A \text{ or } B) = \frac{2}{3}$, independent
 (v) $P(A) = \frac{1}{2}, P(B) = \frac{1}{6}, P(A \& B) = \frac{1}{6}$
 inclusive, $P(A \text{ or } B) = \frac{1}{2}$, dependent

(b) (i) $\frac{1}{9}$ (ii) $\frac{1}{6561}$ (iii) $\frac{2048}{6561}$ (ec) $\frac{384}{6561}$

- IV. (a) $P(D) \approx 0.4565, P(E) \approx 0.5435, P(B) \approx 0.3696,$
 $P(S) \approx 0.3261, P(A) \approx 0.3043, P(B \text{ or } A) \approx 0.6739,$
 $P(B \& A) = 0, P(D \& S) \approx 0.1304, P(E \& B) \approx 0.2609,$
 $P(D|S) = 0.4, P(S|D) \approx 0.2857, P(E|B) \approx 0.7059,$
 $P(B|E) = 0.48$

- (b) (i) (1) $P(L) = 0.002,$ (2) $P(L^c) = 0.998,$ (3) $P(+|L) = 0.937,$
 (4) $P(-|L) = 0.063,$ (5) $P(+|L^c) = 0.03,$ (6) $P(-|L^c) = 0.97,$
 (7) $P(L \& +) = 0.001874,$ (8) $P(L \& -) = 0.000126,$
 (9) $P(L^c \& +) = 0.02994,$ (10) $P(L^c \& -) = 0.96806$
 (ii) $P(-) = 0.968186$
 (iii) $P(L|+) \approx 0.058905$
 (iv) $P(L^c|-) \approx 0.999870$