Answers to MAT 119 even review problems:

Chapter 6:

2. $\subset$, $\subseteq$ 4. $\subset$, $\subseteq$ 6. $\subset$, $\subseteq$ 8. $\subset$, $\subseteq$ 10. none of these 12. none of these 14. none of these 16. none of these 18. (a) $\{1,2,4,5,7\}$ (b) $\{6\}$ (c) $\{1,2,4,5,7\}$ (d) $\{1,2,3,4,5,6,7\} = U$ (e) $\{2,3,6,7\}$ (f) $\{1,5\}$ 24. It is the set of all states whose names begins with an A and ends with a consonant. 26. It is the set of all states that do not lie east of the Mississippi River. 28. It is the set of all states whose names neither start with an A nor end with a vowel. 30. $16$ 32. (a) $14$ (b) set $B$ is a subset of set $A$. 34. $c(A \cap C) = 1$, $c(A \cup C) = 4$ 36. (a) $45$ (b) $33$ (c) $50$ 38. A could equal any of the following sets: $\{2\}, \{1,2\}, \{4,2\}, \{5,2\}, \{1,2,4\}, \{1,2,5\}, \{2,4,5\}, \{1,2,4,5\}$ 40. $120$ 42. $45$ 44. $20$ 46. $720$ 48. $5040$ 50. $405,150$ 52. 45 54. 1 60. 24 62. 24 64. 900 66. (a) $12$ (b) $6$ 68. (a) $13!$ (b) $7! \cdot 6! = 3,628,800$ 70. (a) $961$ (b) $P(31,2) = 930$ (c) $C(31,2) = 465$ 72. $P(100,1) + P(100,2) + P(100,3) = 980,200$ 74. 291,060 76. 30 78. 60 80. 7,020,000 82. (a) $1024$ (b) $55$ 84. $1260$ 86. $1260$ 88. 130 90. 132 92. 58 94. 72 96. 72 98. 44 100. 54 102. 72 104. 72 106. 72 108. 72 110. 72 112. 72 114. 72 116. 72 118. 72 120. 72

Chapter 7:

6. $S=\{G,C\}$ $P(G) = \frac{7}{12}$ $P(C) = \frac{5}{12}$ 8. $S=\{H,T\}$ $P(H) = \frac{4}{5}$, $P(T) = \frac{1}{5}$ 10. a) $S=\{HHH,HHT,HTH,THH,HTT,THT,TTH,TTT\}$ The probability of each simple event occurring is $\frac{1}{8}$. b) (i) $\frac{1}{2}$ (ii) $\frac{1}{2}$ (iii) $\frac{3}{4}$ (iv) $\frac{7}{8}$ (v) $\frac{1}{2}$ (vi) $\frac{1}{8}$ 12. a) $S=\{GGGG,GGGB,GGBG,GBGG,GGGB,GGBB,GBGB,GBGG,GBBB,BGBB,BBBG,BBBB\}$ The probability of each simple event occurring is $\frac{1}{16}$. b) (i) $\frac{1}{4}$ (ii) $\frac{1}{16}$ (iii) $\frac{15}{16}$ (iv) $\frac{1}{4}$ 14. (a) $\frac{26}{51}$ (b) $\frac{25}{51}$ (c) $\frac{25}{102}$ 16. (a) $1.0$ (b) $0.2$ (c) $0.9$ 18. (a) $0.81$ (b) $0.19$ 20. (a) $0.5$ (b) $0.78$ (c) E and F are not mutually exclusive since $P(E \cap F) = 0.35 \neq 0$ 22. (a) $0.7$ (b) $0.8$ (c) $0.9$ 24. (a) $0.75$ (b) $0.7$ (c) $0.0$ (d) $1$ (e) $0.45$ (f) $1$ 26. $\frac{8}{13}$ 28. (a) The events are not equally likely (b) The outcome BLUE has the highest probability (c) $P(F) = \frac{72}{385}$ 30. $\frac{5}{48}$ 32. 1 to 15 34. The probability the Giants win is $\frac{5}{8}$. The probability the Giants lose is $\frac{3}{8}$. 36. $P(E) = \frac{1}{8}$, $P(F) = \frac{3}{8}$, $P(E \cap F) = \frac{3}{64}$. Since $P(E \cap F) = P(E) \cdot P(F)$, the events are independent. 38. (a) $\frac{5}{7}$ (b) $\frac{10}{17}$ (c) $0.63$ 40. $\frac{1}{4}$ 42. (a) $0.0675$ (b) $0.2875$ (c) $0.7652$ 44. (a) $\frac{69}{200}$ (b) $\frac{21}{50}$ (c) $\frac{13}{50}$ (d) $\frac{2}{5}$ (e) $\frac{147}{400}$ (f) not independent 48. (a) $0.0152$ (b) $0.6818$ (c) $0.3182$ 52. $\frac{5}{9}$ 54. (a) $0.00243$ (b) $0.3087$ (c) $0.9976$