Chapter 4

Section 4.2

(6) 0.80  (12) 1 (a certain event)  (14a) 1  (14b) 0  (14c) 1/10 = 0.1  (14d) ½ = 0.5  (14e) 1/5 = 0.2

Practice problems on example sheet: 1.  \[ S = \{H_1, H_2, H_3, H_4, H_5, H_6, T_1, T_2, T_3, T_4, T_5, T_6\} \]

(2a) 0.503  (2b) 0.650  (2c) 0.895  (2d) 0.068

Section 4.3

(2) Yes. If one event is the complement of another, the events must be disjoint.

(14) \[ P(\text{not colorblind}) = 0.9975 \] or 0.998

(16) The probability that a screened driver is not intoxicated ; 0.99112 or 0.991

(18) \[ P(\text{did not lie}) = 0.480 \]

(20) \[ P(\text{P or L}) = 0.847 \]

(28) \[ P(60+ and responded) = 0.168 \]

Practice problems: (1a) 0.037  (1b) 0.652  (2a) 0.08  (2b) No, because \( P(A \text{ and } B) = 0.08 \), not 0.

(3a) No, because this would make \( P(\text{Union OR > $15 per hour}) = 1.05 \), which is impossible.

(3b) \[ P(> $15 \text{ per hour}) = 0.75 \]

(4a) \[ P(K \text{ and } L) = 0 \]

(4b) Yes, because \( P(K \text{ and } L) = 0 \). In other words, K and L have no overlap

5. \( P(M) = 0.51 \)

Section 4.4

(14) \[ P(\text{false & false & false}) = \frac{15}{98} \times \frac{14}{97} \times \frac{13}{96} = 0.00299 \text{ or } 0.003. \] Yes – a very low probability.

(16) \[ P(\text{incorrect & incorrect & incorrect & incorrect}) = \frac{24}{98} \times \frac{23}{97} \times \frac{22}{96} \times \frac{21}{95} = 0.00294 \text{ or } 0.003. \]

Yes – a very low probability.

(18a) \[ \frac{2}{100} \times \frac{2}{100} \times \frac{2}{100} = 0.00008 \]

(18b) \[ \frac{2}{100} \times \frac{1}{99} \times \frac{0}{98} = 0 \]

(20a) \[ \frac{4}{100} \times \frac{4}{100} \times \frac{4}{100} = 0.000064 \]

(20b) \[ \frac{4}{100} \times \frac{3}{99} \times \frac{2}{98} = 0.0000247 \]

(22) Let \( P \) be the event that a power supply unit is okay. Then \( P(\text{entire batch is accepted}) = P(P_1 \text{ and } P_2 \text{ and } P_3) = \frac{392}{400} \times \frac{391}{399} \times \frac{390}{398} = 0.941 \)

Practice problems: (1a) 5/14 or 0.357  (1b) 3/28 or 0.107  (1c) 15/28 or 0.536

(2a) 31/60 or 0.517  (2b) 3/4 or 0.75  3. 19/28 or 0.679  4. 0.64  (5a) 0.376  (5b) 0.048
Section 4.5

(14) 0.135 A problem because false positive results indicate marijuana use when it is not the case
(16) 0.981 (22) 0.902; no (24) 0.465 Practice problems on example sheet: (1a) 0.524
(1b) 0.486 (2a) 0.308 (2b) 0.633 (2c) because the sample space for each is different.
3. P(K | L) = 0 4. P(M or N) = 0.7065 5. 0.2 6. (a) 0.824 (b) 0.358

Chapter 5

Section 5.2

Practice problems (1a) x = number of courses taken by a random TCU student (1b) discrete
(1c) x = {1, 2, 3, . . . } (2a) P(y = 2) = 0.134 (2b) P(y ≤ 4) = 0.923 (2c) P(y > 1) = 0.415
(2d) P(2 ≤ y ≤ 4) = 0.338 (2e) µ = 1.5, σ = 1.7
(2f) P(-0.2 < x < 3.2) = P(x = 0 or x = 1 or x = 2 or x = 3) = 0.830

Section 5.3

Practice problems: (1) 0.001 (2) 0.791 There is a probability of 0.791 that at most three of a
sample of fifteen Fort Worth residents favor an increase in sales tax. (3) 0.956 (4) 0.013 The
probability that all 15 of the customers who sampled Tasty Fry Onion Rings made a purchase is 0.013.

Section 5.4

(12a) µ = 24.0, σ = 4.271 (16a) µ = 266.0 , σ = 14.124
Practice problems: (1) µ = 1.44, σ = 1.14 (2a) µ = 15.6 (2b) σ = 1.85
(3a) µ = 1.26, σ = 0.85 (3b) P(0.41 ≤ x ≤ 2.11) = P(x = 1 or x = 2) = 0.731

Chapter 6

Section 6.2

(38) 0.9545 (40) z = 0.9995 Practice Problems: (1) 1.18 ; 0.58 ; -1.04 ; 1.64

Section 6.3

(16) 0.1613 (20) 105 Practice Problems: (1a) 0.111 Approximately 11% of kindergarten
children will be under 3 feet (36 inches) tall. (1b) 35.9 to 40.5 inches (1c) 41.2 inches
(2) GRE score = 557 (3) 20.3 pounds