Qnt 561 week 1 individual assignment

QNT/561: Week One Assignment Exercises 80, 82, and 87 (Ch. 3) Exercise 80* a. The times are a population because we are considering the wait times for all of the customers seated on Saturday night. b. To find the mean: μ = ? X N μ = 1021 25 μ = 40. 84 To find the median: The midpoint value of the population is 39. c. To find the range: Range = Largest Value – Smallest Value Range = 67 – 23 Range = 44 To find the standard deviation: ? = v? (X – μ)2 N ? = v? (X – 40. 84) 2 = v5291. 36 = v211. 65 = 14. 55 25 25 Exercise 82* a. To find the mean cost: X = ? fM = 7, 060 = $141. 20 N 50 b.

To find the standard deviation: s = v? f (M – X)2 = v33, 728 = v688. 33 = 26. 24 n – 1 50 – 1 c. To find the proportion of costs within two standard deviations of the mean: X ± 2s 141. 2 + 2(26. 24) = 193. 68 141. 2 – 2(26. 24) = 88. 72 The electricity costs are all almost all within $89 to $194. Exercise 87* a. Select the variable selling price. 1. Mean = 221. 1029 Median = 213. 6 Standard Deviation = 47. 1054 2. The mean selling price for a home in the Denver, CO area is about $221, 103 while the median price is a bit lower at $213, 600. With the standard deviation being high at $47, 105, the range of home prices is quite big. . Select the variable referring to the area of the home in square feet. 1. Mean = 2223. 81 Median = 2200 Standard Deviation = 248. 6594 2. The mean size of a home in the Denver, CO is about 2224 square feet while the median size is a bit lower at 2200 square feet. The standard deviation of 248. 6594 is somewhat low indicating the homes being sold are all close to the same size. Exercises 34, 36, and 38 (Ch. 5) Exercise 34 P(A3| B1) = P(A3)P(B1| A3) P(A1)P(B1| A1) + P(A2)P(B1| A2) + P(A3)P(B1| A3) = (. 40)(. 10) = . 04 (. 20)(. 25) + (. 40)(. 05) + (. 40)(. 10) . 11 = . 3636 Exercise 36

P(A1) = . 80 The probability the student will complete the assigned problems. P(A2) = . 20 The probability the student will not complete the assigned problems. B1 The student passes the course B2 The student does not pass the course P(B1| A1) = . 90 P(B2| A1) = . 10 P(B1| A2) = . 60 P(B2| A2) = . 40 P(A1| B1) = P(A1)P(B1| A1) P(A1)P(B1| A1) + P(A2)P(B1| A2) = (. 80)(. 90) = . 72 (. 80)(. 90) + (. 20)(. 60). 84 = . 857 Exercise 38 P(A1) = . 25 The probability the garage door will be left open. P(A2) = . 75 The probability the garage door will be closed. B1 The garage will be robbed.

B2 The garage will not be robbed. P(B1| A1) = . 05 P(B2| A1) = . 95 P(B1| A2) = . 01 P(B2| A2) = . 99 P(A1| B1) = P(A1)P(B1| A1) P(A1)P(B1| A1) + P(A2)P(B1| A2) = (. 25)(. 05) = . 0125 (. 25)(. 05) + (. 75)(. 01) . 02 = . 625 Exercises 45 and 62 (Ch. 6) Exercise 45* P(x) = nCx ? x(1 – ?)n – x We know: n = 10 ? = . 1 (probability of a defect) nCx = n! x! (n – x)! a. Where x = 5 P(5) = 10C5 (. 10) 5(1 – . 1)10 – 5 = 252 (. 00001)(. 59049) = . 001488035 b. Where x = 5 or more P(5 or more) = 10C5 (. 10) 5(1 – . 1)10 – 5 + 10C6 (. 10) 6(1 – . 1)10 – 6 + 10C7 (. 10) 7(1 – .)10 – 7 + 10C8 (. 10) 8(1 – . 1)10 – 8 + 10C9 (. 10) 9(1 – . 1)10 – 9 + 10C10 (. 10) 10(1 – . 1)10 – 10 = 252(. 00001)(. 59049) + 210(. 000001)(. 6561) + 120(. 0000001)(. 729) + 45(. 00000001)(. 81) + 10(. 000000001)(. 9) + 1(. 0000000001)(1) = . 001634937 Exercise 62* P(x) = nCx ? x(1 – ?)n – x We know: n = 200 ? = . 015 (probability of a defect) a. Where x = 0 P(0) = 200C0 (. 015) 0(1 – . 015)200-0 = 1 (1)(. 048668) = . 048668 b. Where x = 3 or more P(x ? 3) = 1 – 200C0 (. 015)0(1 – . 015)200-0 – 200C1 (. 015)1(1 – . 015)200-1- 200C2 (. 015)2(1 – . 015)200-2 = 1 – 1(1)(. 048668) – 200(0. 015)(. 49409) -19900(. 000225)(. 050162) = 1 – . 048668 – . 148228 – . 2246 = . 578504 Exercises

42 and 45 (Ch. 7) Exercise 42 z = X – μ ? μ = 32 ? = 2 a. When X = 29 z = 29 – 32 = -3 = -1. 5 2 2 When X = 34 z = 34 – 32 = 2 = 1 2 2 When X = 32, z = 0 When X = 34, z = 1 P(0 < z < 1) = 0. 3413 = 34. 13% b. When X = 29, z = -1. 5 When X = 34, z = 1 P(-1. 5 < z < 1) = 0. 4332 + 0. 3413 = 0. 7745 = 77. 45% c. z = X – μ ? z = 28. 7 – 32 = -3. 3 = -1. 65 2 2 P(z < -1. 65) = . 0495 = 4. 95% d. . 5 – . 05 = . 45 P(z < 1. 645) = . 05 = 5% z = X – μ 1. 645 = X – 32 2 3. 29 = X – 32 X = 3. 29 + 32 = 35. 29 hours Exercise 45 z = X – μ ? μ = $1, 280 ? = $420 a. When X = $1, 500 z = 1500 – 1280 = 220 = . 52381 420 420 P(z > . 52381) = . 300206 = 30. 02% b. When X = $1, 500, z = . 52381 When X = $2, 000 z = 2000 – 1280 = 720 = 1. 7143 420 420 P(. 52381 > z > 1. 7143) = . 557173 – . 300206 = . 256967 = 25. 7% c. When X = $0 z = 0 – 1280 = -1280 = -3. 04762 420420 P(z < -3. 04762) = . 001153 = . 12% d. . 5 – . 1 = . 4000 P(z < 1. 281) = . 10 = 10% z = X – μ ? 1. 281 = X – 1280 420 538. 02 = X – 1280 X = 538. 02 + 1280 = $1818. 02