

Ch1 the nature of probability & statistics Outline			
Section	Exercise	Review Exercise	Chapter Quiz
1-1	1. Definition 2. Definition 9. Inferential 10. Inferential 11. Descriptive 12. Inferential 13. Inferential 14. Descriptive 15. Descriptive 16. Descriptive 17. Inferential	1. Inferential 2. Descriptive 3. Descriptive 4. Descriptive 5. Inferential 6. Inferential 7. Descriptive 8. Inferential	14. Descriptive, Inferential 16. Population 17. Sample 22.a. Descriptive 22.b. Inferential 22.c. Inferential 22.d. Inferential 22.e. Inferential
1-2	5. Qualitative 6. Quantitative 7. Quantitative 8. Quantitative 9. Qualitative 10. Quantitative 11. Discrete 12. Continuous 13. Continuous 14. Discrete 15. Discrete 16. Continuous 23. Nominal 27. Ordinal 28. Nominal	10. Ordinal 15. Ordinal 18. Nominal 19. Qualitative 20. Quantitative 21. Quantitative 22. Qualitative 23. Quantitative 24. Quantitative 25. Quantitative 26. Qualitative 27. Discrete 28. Continuous 29. Discrete 30. Continuous 31. Continuous 32. Discrete 33. Continuous 34. Continuous	5. True 6. True 8. c 11. a 23.a. Nominal 23.c. Ordinal 24.a. Continuous 24.b. Discrete 24.c. Continuous 24.d. Continuous 24.e. Discrete
1-3	11. Systematic 12. Stratified 13. Random 14. Cluster 15. Cluster 16. Random	39. Cluster 40. Systematic 41. Random 42. Systematic 43. Stratified	10. d 19.a. Random 19.b. Systematic 19.c. Cluster 19.d. Stratified
1-4	15. Experimental 16. Observational 17. Observational 18. Experimental 19. I-Minutes, D-Catching 20. I-Hugs, D-Heart 21. I-time, D-rational 22. I-Income, D-Number	45. Experimental 46. Observational 47. Observational 48. Experimental 49. I-Type, D-Milligrams 50. I-Miles, D-Triglyceride 51. I-Thyme, D-Antioxidants 52. I-Laughing, D-Pain	12. c
Ch2 frequency distributions & graphs			
Section	Exercise	Review Exercise	Chapter Quiz
2-1	2. Categorical, Ungrouped, Grouped 5.42.5-47.5, 45, 5 6.124.5-131.5, 128, 7	-	1. False 3. False 12. Categorical, Ungrouped, Grouped 14. Categorical

Ch2 frequency distributions & graphs			
Section	Exercise	Review Exercise	Chapter Quiz
2-2	-	-	2. False 6. False 8. c
2-3	-	-	7. False 10. b 15. Time series 17. Vertical or y
Ch3 data description “ for row data “			
Section	Exercise	Review Exercise	Chapter Quiz
3-1	1. 994.6, 940, 1180, 1092.5 2. 3174.6, 1479, no mode, 5012.5 3. 134.6, 41, 2, 504.5 25. 35.4% 26. \$545666.67 29.a. mode 29.c. median 29.d. mode 29.e. mean 29.f. median 31. \bar{x}, μ	1. 27.2, 19, 17, 38 5. 1.43 viewers 6. \$4700	1. True 3. False 4. False 5. False 6. False 8. False 10. c 11. c 16. Statistic 17. Parameters, Statistic 20. midrange 21. Positively
3-2	1. Square root of variance is standard deviation 2. extremely high or low data value will influence range 3. σ^2, σ 4. s^2, s 6. no; a has smallest variation; c has biggest variation 7. 226; 3577.7; 59.8 14. 22; 35.5; $5.96 \approx 6$ 27. 20.9%; 22.5%. factory worker are more variable 30. 23.1%; 12.9%; age is more variable	7. 206; 7242.01; 85.1 13. 31.25%; 18.6%; number of book is more variable 14. magazine variance; 21.4%; year variance; 41.7%; year are more variable	18. Standard deviation 19. σ 23.a. 15.3 23.b. 15.5 23.c. 15, 16, and 17 23.d. 15 23.e. 6 23.f. 3.57 23.g. 1.9 26. convenience store is more variable

Ch3 data description “ for row data “			
Section	Exercise	Review Exercise	Chapter Quiz
3-3	1. z-score tells how many standard deviations data value is above or below mean. 5. $Q_1 = P_{25}; Q_2 = P_{50}; Q_3 = P_{75}$ 9. -0.40; 1.47; -1.91 10. $z_{Byrd} = 2.30; z_{sumunu} = -1.70$ 11.a. 0.6 11.b. -1.2 11.c. 2.4 11.d. -2.2 11.e. 0.2 12.a. \$74566 12.b. \$43966 12.c. \$54166 12.d. \$79666 12.e. \$37846 13. Neither; $z=1.5$ for each 14. 0.64; 0.95. Student from university has higher relative debt 15.a. 0.55 15.b. -1.17 15.c. 19690; 12340; 14090 16.a. -0.93 16.b. -0.85 16.c. -1.4; score in part b is higher 21. 94 th ; 72 nd ; 61 st ; 17 th ; 83 rd ; 50 th ; 39 th ; 28 th ; 6 th ; 597 22. 7 th ; 21 st ; 36 th ; 50 th ; 64 th ; 79 th ; 93 rd ; 47 23. 5 th ; 15 th ; 25 th ; 35 th ; 45 th ; 55 th ; 65 th ; 75 th ; 85 th ; 95 th ; 2.1 24. 8 th ; 25 th ; 42 nd ; 58 th ; 75 th ; 92 nd ; 12 25. $Q_1 = 16; Q_3 = 27.1$ 26. $Q_1 = 140000; Q_3 = 375000$ 27. $Q_1 = 6.2; Q_3 = 7.2$ 28. $Q_1 = 4.5; Q_3 = 24$ 29.a. 3 29.b. 54 29.c. None 30.a. None 30.b. 145 30.c. None	22.a. -0.5 22.b. -0.8; <u>a</u> is better 25.a. 400 25.b. None 26.a. None 26.b. None	9. False 14. <u>d</u> 22. Outlier
3-4	1. 6, 8, 19, 32, 54; 24 2. 7, 11.5, 19, 35, 48; 23.5 3. 188, 192, 339, 437, 589; 245 7. 11, 3, 8, 5, 9, 4 8. 325, 200, 275, 300, 75 10. 6000, 2000, 4000, 3000, 5000, 2000	-	13. <u>b</u>
Ch10 CORRELATION & REGRESSION			
Section	Exercise	Review Exercise	Chapter Quiz
10-1	3. r, ρ (<i>rho</i>) 4. -1 to +1 7. Scatter plot. It shows nature pf relationship 8. Pearson product moment correlation coefficient	-	-

Ch10 CORRELATION & REGRESSION			
Section	Exercise	Review Exercise	Chapter Quiz
10-2	3. $y' = a + bx$ 4. b, a 5. Definition 6. +1 or -1 7. When r is positive, b will be positive, when r is negative, b will be negative 8. They would be clustered closer to the line 11. $y' = -13.151 + 25.333x$; $y' = 100.848$ 12. $y' = 1.281 + 0.022x$; $y' = 2.601$ 13. $y' = 181.661 + 7.319x$; $y' = 1645.5$ 14. $y' = -31.460 + 1.036x$; $y' = 30.7$ 15. $y' = 453.176 - 50.439x$; $y' = 251.42$ 19. $y' = -7.957 + 4.601x$; $y' = 47.255$ 20. $y' = 87.409 - 0.868x$; $y' = 22.309$ 21. $y' = -14.974 + 0.111x$ 22. $y' = -2.949 + 1.113x$; $y' = 63.831$ 23. $y' = -33.261 + 1.367x$; $y' = 76.1$ 24. $y' = 2.693 + 1.962x$; $y' = 62$ 26. $y' = 206.399 + 9.262x$; $y' = 613.9$	-	-
Ch13 nonparametric statistics			
Section	Exercise	Review Exercise	Chapter Quiz
13-6	-	-	-
Ch4 probability & counting rules			
Section	Exercise	Review Exercise	Chapter Quiz
4-1	1. Definition 2. Definition 3. From Definitions 4. Definition 5. $0 \leq P(E) \leq 1$ 6. 1 7. 0 8. 1 9. 0.80; No 10. <u>c</u> , <u>d</u> , <u>e</u> , <u>h</u> 13.a. $\frac{1}{6}$ 13.b. 0 13.c. $\frac{1}{2}$ 13.d. 1 14.a. 1 14.b. $\frac{2}{3}$ 14.c. $\frac{1}{3}$ 14.d. 0 15.a. $\frac{1}{9}$ 15.b. $\frac{2}{9}$ 15.c. $\frac{1}{6}$ 16.a. $\frac{13}{18}$ 16.b. $\frac{1}{6}$ 16.c. $\frac{11}{36}$ 19.a. 0.1 19.b. 0.2 19.c. 0.8 21.a. 0.43 20.b. 0.52 21.c. 0.17 23.a. 0.04 23.b. 0.52 23.c. 0.4 25.a. $\frac{1}{8}$ 25.b. $\frac{1}{4}$ 25.c. $\frac{3}{4}$ 25.d. $\frac{1}{4}$ 32. 0.694; 0.925	1.a. 0.167 1.b. 0.667 1.c. 0.5 4.a. 0.178 4.b. 0.311 4.c. 0.348 6.a. $\frac{1}{4}$ 6.b. $\frac{1}{6}$ 6.c. $\frac{1}{4}$ 6.d. $\frac{1}{4}$ 6.e. 0 6.f. 1	1. False 2. False 3. True 6. False 12. <u>b</u> 18. Sample space 19. 0, 1 20. 0 21. 1 22. Mutually exclusive 25.a. $\frac{12}{31}$ 25.b. $\frac{12}{31}$ 25.c. $\frac{27}{31}$ 25.d. $\frac{24}{31}$ 26.a. $\frac{11}{36}$ 26.b. $\frac{5}{18}$ 26.c. $\frac{11}{36}$ 26.d. $\frac{1}{3}$ 26.e. 0 26.f. $\frac{11}{12}$

Ch4 probability & counting rules			
Section	Exercise	Review Exercise	Chapter Quiz
4.2	1. Definition 3.a. No 3.b. No 3.c. Yes 3.d. No 4.a. Yes 4.b. No 4.c. Yes 4.d. Yes 5.a. 0.707 5.b. 0.589 5.c. 0.011 5.d. 0.731 6. 0.63 7.a. 0.184 7.b. 0.921 8.a. 0.599 8.b. 0.401 8.c. 0.869 9. $\frac{11}{19}$ 11.a. $\frac{6}{7}$ 11.b. $\frac{4}{7}$ 11.c. 1 13.a. 0.058 13.b. 0.942 13.c. 0.335 16.a. 0.301 16.b. 0.592 16.c. 0.412 17.a. $\frac{7}{58}$ 17.b. $\frac{16}{29}$ 17.c. $\frac{12}{29}$ 18.a. $\frac{467}{1392}$ 18.b. $\frac{47}{58}$ 18.c. $\frac{833}{1392}$ 19.a. $\frac{1}{15}$ 19.b. $\frac{1}{3}$ 19.c. $\frac{5}{6}$ 19.d. $\frac{5}{6}$ 19.d. $\frac{1}{3}$ 20.a. 0.281 20.b. 0.938 20.c. 0.563 21.a. $\frac{5}{12}$ 21.b. $\frac{1}{8}$ 21.c. $\frac{2}{3}$ 21.d. $\frac{23}{24}$ 22.a. $\frac{29}{100}$ 22.b. $\frac{2}{3}$ 22.c. $\frac{157}{300}$ 24.a. $\frac{1}{3}$ 24.b. $\frac{1}{3}$ 24.c. $\frac{1}{4}$ 24.d. $\frac{1}{4}$	7. 0.19 8. $\frac{13}{60}$ 9. 0.98 10. 0.24 11.a. 0.0001 11.b. 0.402 11.c. 0.598 12.a. $\frac{9}{35}$ 12.b. $\frac{23}{35}$ 12.c. $\frac{19}{35}$ 12.d. $\frac{19}{35}$	4. False 9. <u>b</u> 27. 0.68
4.3	1. Independent (a) 2. Independent (a, d) 4. 7.3% 6. 6.3% 8.a. 0.807 8.b. 0.193 10.a. 0.142 10.b. 0.312 10.c. 0.261 12. $\frac{1}{15}$ 13.a. $\frac{1}{270725}$ 13.b. $\frac{11}{4165}$ 13.c. $\frac{46}{833}$ 14. $\frac{5}{28}$ 15.a. $\frac{1}{17}$ 15.b. $\frac{4}{17}$ 15.c. $\frac{1}{221}$ 16. $\frac{3}{29}$	13.a. $\frac{2}{17}$ 13.b. $\frac{11}{850}$ 13.c. $\frac{1}{5525}$ 15.a. 0.603 15.b. 0.340 15.c. 0.324 16.a. $\frac{57}{104}$ 16.b. $\frac{10}{13}$ 16.c. $\frac{3}{4}$	28. 0.002 29.a. $\frac{253}{9996}$ 29.b. $\frac{33}{66640}$ 29.c. 0 30. 0.538 31. 0.533

Ch4 probability & counting rules

Section	Exercise	Review Exercise	Chapter Quiz
4-4	1. 100000, 30240	48. 53130	27. 175760000, 78624000
	2. 24	49. 7C_2 is 21 combination + 7 tiles = 28	28. 220
	3. 720	50. 191100	29. 350
	4. 362880	51. 330	30. 84
	5. 100000, 30240	52. 1287	31. 8568
	6. 120, 12	53. 194040	32. 800
	7. 40320, 20160	54. 24310	33. 100!
	8. 27600, 35152	55. 125970	34. 30
	9. 112	56. 120	35. 495
	10. 1296, 360	57. 1860480	36. 286
	11. 3991680, 8064	58. 3080	37. 60
	12. 8	59. 136	38. Probability, 4989600
	13.a. 40320 13.b. 3628800 13.c. 1	60. 45	39. 15504
	13.d. 1 13.e. 2520 13.f. 11880	61. 120	40. 60
	13.g. 60 13.h. 1 13.i. 120	62. 300	
	13.j. 30	63. 200	
	14.a. 720 14.b. 39916800 14.c. 2	64. 126	
	14.d. 362880 14.e. 60480 14.f. 7920	65. 336	
	14.g. 1 14.h. 90	66. 11880576	
	15. 24		
	16. 210		
	17. 7315		
	18. 30240		
	19. 840		
	20. 120		
	21. 151200		
	22. 286, 378		
	23. 5527200		
	24. 330		
	25. 495, 11880		
	26. 2520		
	27. 210		
	28. 64864800		
	29. 1260		
	30. 27720		
	31. 18480		
	32. 50400		
	33.a. 10 33.b. 56 33.c. 35		
	33.d. 15 33.e. 15		
	34.a. 1 34.b. 1 34.c. 36		
	34.d. 66 34.e. 4		
	35. 120		
	36. 41580		
	37. 210		
	38. 120		
	39. 1800		
	40. 1820, 496		
41. 6400			
42. 166320			
43. 495, 210, 420			
44. 14400			
45. 475			
46. 194040			
47. 106			

Ch5 DISCRETE PROBABILITY DISTRIBUTIONS

Section	Exercise	Review Exercise	Chapter Quiz
5-1	1. definition. 7. No. Probability cannot be negative. 8. No. Probability cannot be negative. 9. Yes 10. Yes 11. No. The sum of the probabilities is greater than 1 12. No. The sum of the probabilities is less than 1 13. Discrete 14. Discrete 15. Continuous 16. Continuous 17. Discrete 18. Continuous	1. Yes 2. No. The sum of the probabilities does not equal 1 3. No. The sum of the probabilities is greater than 1 5.a. 0.35 5.b. 1.55, 1.808, 1.344	2. False 5. chance 7. 1 8. c 11. No. The sum of the probabilities is greater than 1 12. Yes 13. Yes 14. Yes
5.2	-	8. 2.1, 1.4, 1.2 9. 7.2, 2.2, 1.5 10. 2.1, 1.5, 1.2 11. 24.2, 1.5, 1.2 12. 8100 14. 4.92	1. True
5.3	1.a. Yes 1.b. Yes 1.c. Yes 1.d. No 1.e. No 2.a. Yes 2.b. Yes 2.c. Yes 2.d. No 2.e. Yes 5.a. 0.0005 5.b. 0.131 5.c. 0.342 6.a. 0.007 6.b. 0.173 7.a. 0.832 7.b. 0.441 7.c. 0.336 8. 0.000 9.a. 0.124 9.b. 0.912 9.c. 0.016 10.a. 0.925 10.b. 0.998 10.c. 0.337 11. 0.071 12. 0.020, 0.026, 0.999 13.a. 0.346 13.b. 0.913 13.c. 0.663 13.d. 0.683 14.a. 0.047 14.b. 0.065 14.c. 0.821 15.a. 0.242 15.b. 0.547 15.c. 0.306 16.a. 0.021 16.b. 0.001 16.c. 0 17.a. 75, 18.8, 4.3 17.b. 90, 63, 7.9 17.c. 10, 5, 2.2 17.d. 8, 1.6, 1.3 18.a. 100, 90, 9.5 18.b. 125, 93.8, 9.7 18.c. 20, 12, 3.5 18.d. 6, 5, 2.2 20. 5, 2.5, 1.58 25. 0.199 26. 0.217	15.a. 0.008 15.c. 0.0002	3. False 4. True 6. n.p 9. c 10. d

Ch6 THE NORMAL DISTRIBUTION					
Section	Exercise		Review Exercise	Chapter Quiz	
6-1	3. 1 4. 50% Below and 50% above 5. 68%, 95%, 99.7% 6. Gaussian distribution and bell curve 7. 0.3365 8. 0.4616 9. 0.4838 10. 0.1255 11. 0.3859 12. 0.0222 13. 0.0823 14. 0.2266 15. 0.1043 16. 0.0806 17. 0.0258 18. 0.1909 19. 0.0482 20. 0.4634 21. 0.9868 22. 0.9049	23. 0.5478 24. 0.9726 25. 0.3574 26. 0.0684 27. 0.3212 28. 0.4750 29. 0.4236 30. 0.3907 31. 0.0060 32. 0.2061 33. 0.0721 34. 0.0384 35. 0.9507 36. 0.5199 37. 0.0505 38. 0.0550 39. 0.9222 40. 0.9236	-	1. False 2. True 3. True 4. True 5. False 7. a 8. a 9. b 10. b 12. 0.5 13. sampling error	
6.2	1. 0.0022 2.a. 0.3031 3.a. 0.2005 4. 1146, 0.0307 5.a. 0.3023 6.a. 0.4602 7.a. 0.3557 8.a. 0.0749 10. 0.2061 11.a. 0.9803 12. 35.1 13.a. 0.1635 14. less than 0.0001 15.a. 0.6879 16. Men: 104061.4 Women: 94706.4 18. 722.5 and 861.5 19. 1692.1 and 1927.9 20. 227076.7 and 265523.3 22. 93 23. 7288.1 and 9223.9 25. 10%: 6.657 30%: 4.040	2.b. 0.9131 3.b. 0.4315 5.b. 0.0062 6.b. 0.0031 7.b. 0.8389 8.b. 0.2385 11.b. 0.2514 13.b. 0.0516 15.b. 0.1320	2.c. 0.0016 6.c. 0.6676 11.c. 0.3434 13.c. 0.4658 15.c. 110734	-	-
6.3	1. Sampling distribution 4. $\sigma_{\bar{x}} = \frac{\sigma}{\sqrt{n}}$ 6. $z = \frac{x-\mu}{\sigma}$ 7. 0.0075 8. 0.7135 9.a. 0.0026	9.b. 0.8212	9.c. 0.1787	-	6. False 11. c 14. The population mean 15. Standard error of the mean