Study Guide for Final Exam, Math 125

(The final exam will be on Friday, December 15, and covers material from Chapters 3–5, 8–18, 20, 21, 23, 24, 26, and 28.)

Math 125 *Kovitz* Fall 2023

- **The Histogram.**

  Chapters 3.1, 3.2, and 3.3: pages 31 to 40; example 1, page 40; pages 41 and 42, problems 1 and 4; page 50, problems 1 and 2; page 52, problem 5.

- **The Average and the Standard Deviation.**

  Chapters 4.2 and 4.6, pages 58 to 60 and pages 71 to 72: example 2 on page 72; boxes on pages 59 and 71; pages 72–73, problems 1 and 5 (a); page 74, problem 1; page 82, problems 1(a) and 2(a); page 93, problem 1 (b); summary on page 76: point 2.

- **The Normal Approximation for Data.**

  Chapters 5.1 to 5.3, pages 78 to 87: example 1 on page 80, example 4 on page 83, example 8 on pages 85 and 86; box on page 79; page 82, problems 1 (a) and 2 (a); page 84, problem 1 (e); page 88, problem 1(b); page 94, problems 3 and 4; summary on page 96: points 2 and 4.

- **Computing the Correlation Coefficient.**

  Chapter 8.4, pages 132 and 133: example 1; page 134, problem 1; page 137, problem 9.

- **Association is not Causation.**

  Chapter 9.5, pages 150–152; pages 152–3, problem 3(d); page 266, problem 12,

- **The Regression Method.**

  Chapters 10.1 and 10.3, pages 158 to 161, and pages 165 to 166: example 1 on pages 165 to 166; both boxes on page 160; page 161, problems 1, 2 (a), 2 (b), and 4; page 167, problem 1 (a); page 176, problems 2 (b), 3(a), 4 (a), and 4 (b); page 568, problem 10; summary on page 178: point 1.

- **The R.M.S. Error for Regression.**

  Chapters 11.1 and 11.2, pages 180 to 187; page 193, problems 1 (a), 2 (a), 3 (a); page 198, Review Exercises 1 and 3 (3 at the bottom of the page).

- **The Regression Line.**

  Chapter 12.1, pages 202 to middle of page 205 *Do not use the solutions from the text; that is a confusing method.*; pages 213–4, problems 1 and 2.

- **What Are the Chances?**

  Chapter 13.1, pages 221 to 223 (top); chapter 13.4, pages 230 to 232; example 6, page 229; page 230, problem 7; page 232, top box; page 235, problems 8 and 9.

- **More About Chance: The Addition Rule.**

  Chapters 14.2 through 14.4, pages 241 to 250: examples 3 through 6; both boxes on page 241 and the box on page 242; technical notes on pages 245 and 246; page 243, problems 3 through 6; page 247, problem 4; pages 252 and 253, problems 3, 7, 8, and 11;
  summary on page 254, point 2.

- **The Binomial Formula.**

  Chapter 15.2, pages 259 to 261; example 1; box on page 259; page 261, problems 1 and 2; page 268, problem 20; summary on page 268, point 2.

- **The Law of Averages**

  Chapter 16.1, pages 273 to 277; page 277, problem 4; pages 285 and 286, problems 4, 5, 7, and 8.

- **The Expected Value and Standard Error (for the sum).**

  Chapters 17.1 to 17.3, pages 288 to 296; page 290, problems 1(a) and 1 (d); page 293, problems 1(a), 1 (b), and 4.

- **The Normal Approximation for Probability Histograms**

  Chapters 18.2 to 18.4, and 18.6, pages 310 to 318 and 325 to 327: example 1; boxes on pages 310, 312, 325, and 326; pages 312 and 313, problems 1 and 2 (*Pay particular attention to the answers to problem 2.*); page 319, problems 3, 5, and 6; page 327, problems 1, 2 (b), and4.

- **The Expected Value and Standard Error (for the sample percentage).**

  Chapter 20.2, pages 359 and 360; page 361, problem 2; pages 372 and 373, problems 7 (c) to 7(f) and 9 .

- **The Accuracy of Percentages: Introduction.**

  Chapter 21.1, pages 375 to 379: expecially the top box on page 378 and example 1; page 379, problems 2 to 5; page 386, problem 4 (a).

- **Confidence Intervals.**

  Chapter 21.2, pages 381 and 382: example 2; middle bullet on page 381; page 387, problems 5 (a) to (d), 6 (a) and (b); page 392, problem 5; page 435, problem 27; summary on page 394, points 1, 3, and 4.

- **The Accuracy of Averages: Introduction.**

  Chapter 23.1, pages 409 to 412: example 1 and example 2 (a), also technical note (ii) on page 415; boxes on pages 410 and 412;; page 423, problems 1 to 3; pages 425–427, problems 2 (a) , 3 (a), and 10.

- **Which SE?**

  Chapter 23.3, pages 422 and 423; page 423, problems 1, 2, and 4 (a); summary on page 437, points 2, 4, 5, and 6.

- **A Model for Measurement Error.**

  Chapter 24.1, pages 441 to 443: example 1; box on page 443; pages 444 and 445, problems 2–5.

- **The Gauss Model.**

  Chapter 24.3, pages 450 to 452: example 5; boxes on pages 450 and 451; page 444, problem 4; pages 453 and 454, problems 5 (a), 5 (b), 6, and 7; pages 455 and 456, problems 1, 3, and 10; page 572, problems 30 and 31; summary on page 457, points 1 to 5.

- **The Null and the Alternative**

  Chapter 26.2, pages 477 and 478; page 478, problems 1 and 2; page 495, problem 1.

- **Test Statistics and Significance Levels.**

  Chapter 26.3 and 26.4, pages 478 to 482; page 481, problems 1 (a) and 3; page 483, problems 2 and 3.

- **Zero-one Boxes.**

  Chapter 26.5, pages 483 to 485 top; page 487, problems 7 and 8; page 518, problem 1.

- **The Chi-Square Test.**

  Chapter 28.1 and 28.2, pages 523 to 531: example 1; pages 531 and 532, problems 1–4; summary on page 544, points 1 to 4.

Sample Final Exam for May 2023:   problems 1–9, 11–16, and 18–20.

Practice Problems for Final Examination of May 2023:
problems 1–3, 11, 13, 18, 19, 22, 23, 24, 28, 29, 32, 34, 35, 37, 38, 43, 45, 47, 48 a–d,f,i.

Supplementary Practice for the Final Examination of May 2023:
problems 1–4, 8–20, 26, 29, 31, 32, 37–39, 41, 43, 44, 49, 54, 55, 57, 58 acdf.

Review Problems for Final:
problems 3, 4c, 9a, 12, 14ab, 15a, 16b, 18 (third bullet), 22, 25, 27b, 29, 31, 32a, 35, and 36.

From Test 1:   problems 1, 3, and 4.

From Test 2:   problems 1 to 3.

From Test 3:   problems 1 to 3 and 5 to 7.

From Quiz 1:   problems 1, 2, and 4.

From Quiz 2:   problems 1 and 3.

From Practice for Test 1:   problems 1, 3, 4, and 5.

From Practice for Test 2:   problems 2, 3, and 6.

From Practice for Test 3:   problems 1, 3, 5, 6, and 7.

From Practice for Quiz 1:   problems 3, 4, and 6.

From Practice for Quiz 2:   problems 1 and 3.