

# HOMWORK EXERCISES

Math 3160Q – Fall 2015  
Professor Hohn

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All exercises listed below are fair game for Friday quizzes/exams.

## Quiz 1 – Friday, September 4

- No exercises due this week.

## Quiz 2 – Friday, September 11

- Chapter 1: Problems (pg 15ff): 5, 8, 10, 11, 13, 16, 18, 20, 25, 27, 28, 29, 30, 34
- Chapter 1: Theoretical Exercises (pg 17ff): 8 (see note below), 13, 17 (see note below)
- Note: For theoretical exercise #8, interpret “prove” as “give a convincing argument.” For theoretical exercise #17, interpret “combinatorial argument” as “explain why you expect this to be true by a counting example, rather than just the mathematical algebra.”

## Quiz 3 – Friday, September 18

- Chapter 2: Problems (pg 48ff): 1, 2, 3, 4, 5, 6, 8
- Chapter 2: Theoretical Exercises (pg 52ff): 6, 11, 13

## Quiz 4 – Friday, September 25

- Chapter 2: Problems (pg 48ff): 9, 12, 14, 15, 18, 19, 23, 25, 31, 33, 35, 36, 37, 43
- Chapter 2: Theoretical Exercises (pg 52ff): 12

## Quiz 5 – Friday, October 2

- Chapter 3: Problems (pg 97ff): 1, 4, 5, 11, 14, 17, 23, 27, 29, 32, 35, 38, 40, 43, 44, 51, 53, 54, 66(a), 70
- Chapter 3: Theoretical Exercises (pg. 106ff): 2, 5

## Exam 1 – Friday, October 9

- Chapter 4: Problems (pg. 163ff): 1, 2, 5 (see note below), 7 (see note below), 13, 17, 18, 19, 40 (see note below), 60
- Not from Ross: # 1 from [http://www.math.uconn.edu/~hohn/3160\\_F15/extra\\_hwk\\_ex.pdf](http://www.math.uconn.edu/~hohn/3160_F15/extra_hwk_ex.pdf)
- Note: For #5 and #7, when the book says, “what are the possible outcomes...” for a particular random variable, I want you to read it as, “what is the state space of ...” that particular random variable.

- Note: For #40, you can likely answer this without the “technology” of random variables; however, try and use the random variable technology to get used to it. In particular, if  $X$  is the (random variable giving the) number of correct answers the student gets while guessing, then convince yourself that  $X \stackrel{d}{=} \text{Bin}(n, p)$  for a good choice of  $n$  and a good choice of  $p$ .

**Exam 1 Study Guide/Tips:** All questions listed above are fair game. In addition, any quiz, worksheet, or example problem has a chance of being on the exam. I also strongly suggest you work through the review questions at the end of each chapter as well.

**Quiz 6 – Friday, October 16**

- Chapter 4: Problems (pg 163ff): 20, 21, 25, 30, 32, 35, 37, 38, 41, 51, 52, 53, 54, 55, 58, 59, 72, 79
- Chapter 4: Theoretical Exercises (pg. 169ff): 3, 6, 19, 20
- Not from Ross: # 2, 3, and 4 from [http://www.math.uconn.edu/~hohn/3160\\_F15/extra\\_hwk\\_ex.pdf](http://www.math.uconn.edu/~hohn/3160_F15/extra_hwk_ex.pdf)

**Quiz 7 – Friday, October 23**

- Chapter 5: Problems (pg 212ff): 1, 2, 3, 4, 7, 10, 11, 12, 13
- Not from Ross: # 5 from [http://www.math.uconn.edu/~hohn/3160\\_F15/extra\\_hwk\\_ex.pdf](http://www.math.uconn.edu/~hohn/3160_F15/extra_hwk_ex.pdf)

**Quiz 8 – Friday, October 30**

- Chapter 5: Problems (pg 212ff): 15 (see note below), 17, 18 (see note below), 19 (see note below), 21 (see note below), 23, 25, 26, 27, 28, 32, 33, 40, 41
- Chapter 5: Theoretical Exercises (pg 214ff): 1, 9 (see note below), 10, 15, 31
- Note:
  - For both #15 and #17, leave your answer in terms of  $\Phi$ . For the second question in #21, it is asking for you to condition on the event that the height is  $\geq 6$  feet.
  - The CDF  $\Phi$  of a standard normal random variable is invertible on the range  $(0, 1)$ . That is, if for some  $0 < y < 1$  you have an expression of the form  $\Phi(x) = y$ , you can solve for  $x$  by  $x = \Phi^{-1}(y)$  (where  $\Phi^{-1}$  is the inverse of  $\Phi$ , **not**  $1/\Phi$ ). Therefore, if you don’t want to use the table of values for Problems #18 and #19, you can leave your answer in terms of the inverse  $\Phi^{-1}$ .
  - For Theoretical Exercise #9, when the book says “show,” what I want you to do is to draw a sketch of the density of  $Z$  and convince yourself that the equalities are true by shading in the appropriate areas.

**Exam 2 – Friday, November 6**

- Do all of Exam 2 Practice Problems

**Exam 2 Study Guide/Tips:** All questions listed above are fair game. In addition, any quiz, worksheet, or example problem has a chance of being on the exam. I also strongly suggest you work through the review questions at the end of each chapter as well.

**Quiz 9 – Friday, November 13**

- No new exercises: Exam recovery!
- Study solutions to Exam 2: quiz covers #3 from Exam 2

**Quiz 10 – Friday, November 20**

- Chapter 6: Problems (pg 271ff): 2, 4, 8, 9, 10, 13, 14, 15, 20, 23, 27
- Not from Ross: # 6

**Quiz 11 – Friday, December 4**

- Chapter 6: Problems (pg 271ff): 18, 19, 28, 31, 35, 38, 40, 42, 45, 56 (review Calc 3 - change of variables)
- Chapter 6: Theoretical Exercises (pg 275ff): 5
- Read Covariance and Correlation Notes

**Quiz 12 – Friday, December 11**

- Chapter 7: Problems (pg 352ff): 1, 4, 6, 12, 16, 30, 33, 37, 40, 45, 75
- Chapter 7: Theoretical Exercises (pg 359ff): 19

**Final Exam**

- Chapter 8: Problems (pg 390ff): 3, 4b, 14, 15
- Chapter 4: Problems (pg 163ff): 70
- Do all of Final Exam Practice Problems

**Final Exam Study Guide/Tips:** All questions listed above are fair game. In addition, any quiz, worksheet, or example problem has a chance of being on the exam. I also strongly suggest you work through the review questions at the end of each chapter as well.