Complete the following problems on your own paper, scan your solutions, and then submit the **pdf** to Canvas. You can also submit a pdf of your solutions written on a tablet. Using LaTeX for homework purposes is also a valid option. Your solutions must be numbered and submitted in the order the problems were given, legibly written using correct notation and including all mathematical details. (LaTeX is required for students registered into Math 561). Use complete sentences to explain your conclusions and the logic that justifies your computations. If you submit work that is messy, hastily written, or lacking detail, you should expect to receive little credit regardless of having the correct final answer.

The homework is (mostly) from the text book. All submitted solutions must reflect your understanding of the material. It is not appropriate to use solutions from the Internet or a solutions manual and any suspected use of these aides might be reported for academic dishonesty.

Due: 11:59pm on Friday, October 10th.

1. How many 4-digit numbers, divisible by five, are there?

2. For years, telephone area codes in the United States and Canada consisted of a sequence of three digits. The first digit was an integer between 2 and 9, the second digit was either 0 or 1, and the third digit was an integer between 1 and 9.

    (a) How many area codes were possible?

    (b) How many area codes starting with a 5 were possible?

3. How many different letter arrangements can be made from the letters

    (a) COMMITTEE

    (b) PROPOSITION

    (c) BARRACUDA

4. In how many ways can 10 people be seated in a row if

    (a) there are no restrictions on the seating arrangement?

    (b) persons A and B must sit next to each other?

    (c) there are 5 men and 5 women and no 2 men or 2 women can sit next to each other?

    (d) there are 6 men and they must sit next to one another?

    (e) there are 5 married couples and each couple must sit together?

5. A student has to sell 3 books from a collection of 10 math, 4 science, and 3 economics books. How many choices are possible if

    (a) all three books are to be on the same subject?

    (b) the books are to be on different subjects?

6. Six different gifts are to be distributed among 12 children. How many distinct results are possible if no child is to receive more than one gift?

7. A person has 10 friends, of whom 7 will be invited to a party.

    (a) How many choices are there if 2 of the friends are feuding and will not attend together?

    (b) How many choices if 2 of the friends will only attend together?