Math 4190 — Goddard

Further Exercises for Chapter(s) 1

(Not for handing in.)

1. A club of 50 men and 50 women must choose an executive committee consisting of a president, vice-president, and treasurer. In how many ways can this be done:

(a) If there are no restrictions?

(b) If nobody from last year’s committee can be on this year’s committee?

(c) If last year’s president cannot be president again?

(d) If the president and vice-president must be different genders?

2. The local frozen yoghurt shop has 12 flavors.

(a) How many different 2-flavor cups are there if the order of pouring does matter?

(b) How many different 3-flavor cups are there if the order of pouring does matter?

(c) How many different 2-flavor cups are there if the order of pouring does not matter?

3. The local simple restaurant has 5 appetizers, 4 entrees, and 3 desserts. A customer chooses one of each.

(a) How many customers can eat simultaneously if every one gets a different combination?

(b) How many customers can eat simultaneously if nobody gets the same dish as someone else?

(c) In each category one dish is labeled premium. How many different combinations are there if a customer can have at most one premium dish overall?

4. Three pigs and three wolves line up at a bus-stop. In how many ways can this happen:

(a) If there are no restrictions?

(b) If a pig must be in front and a wolf at the back?

(c) If every pig must have a pig either in front of or behind her or both?