

APPM 3570/STAT 3100 Spring 2019 Homework 2 - Due Jan. 30

- Chapter 2, Problems 2, 3, 5, 8, 11.
- Chapter 2, Theoretical Exercises 6 bdefg, 11 (Hint for 11: use $P(E \cup F) \leq 1$).
- A certain system can experience three different types of defects. Let A_i ($i = 1, 2, 3$) denote the event that the system has a defect of type i . Suppose that $P(A_1) = 0.17$, $P(A_2) = 0.07$, $P(A_3) = 0.13$, $P(A_1 \cup A_2) = 0.18$, $P(A_1 \cup A_3) = 0.19$, $P(A_2 \cup A_3) = 0.18$ and $P(A_1 \cap A_2 \cap A_3) = 0.01$. For each of the following events, (i) describe it with a Venn diagram, (ii) describe it with set notation and (iii) find its probability.
 1. The system does not have a type 1 defect;
 2. The system has both type 1 and type 2 defects;
 3. The system has both type 1 and type 2 defects but not a type 3 defect;
 4. the system has at most two defects.

Note, as with all homework sets in this class, that you may discuss the homework problems with your classmates. However, the work you turn in must be your own – you should write your solutions on your own. Identical solutions will be considered as a violation of the Student Honor Code. Furthermore, **no work equals no credit**. Your homework should be neatly written or typed and stapled.

On the front of your homework clearly print your:

- First Name and Last Name
- Lecture number (either Section 001 or Section 002) and homework number.
- Draw a **blank grading table** with room for 3 problems, format points and a total:

Question	Points
Format	
Total	

- Points will be deducted if these instructions are not followed.

Remember that writing style, clarity, and completeness of explanations are always important. Justify your answers.