

AMAT 362—Work Sheet 04

Dr. Justin M. Curry

Due: February 9, 2022. Worth 11 points.

Name: _____

1. (4 points) An urn contains 15 red balls, 20 green balls and 12 yellow balls. Consider the experiment where we draw two balls without replacement. Consider the event A where exactly one red ball *or* one yellow ball is drawn.

- (a) (2 points) Decompose the event A into three mutually exclusive events and use this decomposition to compute the probability of A .

- (b) (2 points) Notice that A is the union of the events

$$R = \{\text{exactly one red ball is drawn}\} \cup Y = \{\text{exactly one yellow ball is drawn}\}$$

Why are these events not disjoint? Compute $P(A)$ using the formula

$$P(A) = P(R) + P(Y) - P(R \cap Y).$$

2. (2 points) Suppose I deal a regular 52 card deck to 4 people, by giving each person 13 cards uniformly at random. What's the probability that each person gets exactly one Ace?

3. (2 points) An urn contains 10 red balls, 7 green balls and 3 yellow balls. Draw 5 balls.
- (a) (1 point) What's the probability that you draw 2 red, 2 green and 1 yellow?
 - (b) (1 point) Same experiment as above. What's the probability that you draw 2 red, 1 green and 2 yellow?
4. (1 point) How many ways are there of rearranging the letters in WAAHOOO?
5. (1 point) 6 people in a house are charged with completing one of three different chores: two people sweep, two people clean bathrooms, and two people do the dishes. How many ways are there of assigning people to do these tasks?
6. (1 point) How many ways are there of splitting 6 people into 3 pairs?