

*Each WA is worth 10 points. Work right on these pages, then scan and upload or give to me in print. You can work together or see a tutor, but NEVER copy. This WA is for a grade, so dishonesty or cutting corners may earn a 0 for all involved.*

1. [2 pts - 0.5 each] An experiment consists of choosing a ball at random from a bowl containing TWENTY black balls, numbered 1, 2, ..., 20 and TEN red balls, numbered 1, 2, ..., 10. Find the probability of each event below. Leave your answer in UNSIMPLIFIED form. You may list favorable outcomes if you like, but you are not required to.

(a) Getting a ball that's red and has a multiple of 5 on it

(b) Getting a ball that's black and has a prime number on it

(c) Getting a number that's at least 15

(d) Getting a black ball or a ball with the digit 2 or SOMEWHERE on it (so 20 contains the digit 2, etc.)

2. [2.5 pts - 0.5 each] Create a uniform sample space for the following experiment and use it to answer the questions that follow. Label or legend your original sample space AND all favorable outcomes clearly.

You toss a 6-sided die and spin two spinners marked A, B in equal sections.

- (a) What is the probability that the number is at least 4 and the spinners DON'T match?
- (b) What is the probability that the number is at least 4 or the spinners DON'T match?
- (c) What is the probability that the number on the die is 1 more than the number of As you got?
- (d) What is the probability that the number on the die is 5 and you got exactly one A?

3. [1.5 pts] Draw and FULLY label a tree diagram representing all possibilities when you toss a coin and choose a number 1 to 5. Include the actual outcomes at the end of your tree.

4. [4 pts - 1 each] A code is created using 3 letters, then 2 digits, and finally one more letter. Repeats are allowed unless specifically forbidden. Express the answer to each question below in UNSIMPLIFIED form first, then in simplified form. All questions are separate from each other.

(a) How many codes only use the letters A, B, and/or C?

(b) How many codes use only vowels (remember, Y is NOT) and even digits, and don't repeat any DIGITS?

(c) How many codes use the same letter and the same digit every time?

(d) How many codes start and end with different vowels?