Hi this is Asmita! I am a Student Success Coach and will be explaining some practice problems from the MA121 Introduction to Statistics course. Today we will review an assigned problem from Unit 2. In the “Homework Assessment” you were asked to solve this problem:

In the situation of Exercise 1, list the outcomes that comprise each of the following events.

a. At least one marble of each color is drawn.

b. No white marble is drawn

We will use concept of a sample space and a subset of the sample space to list the all possible outcomes for events.

We will approach this problem as follow:

1. Write the sample space by referring of Exercise 1.

2. List out the all appropriate outcomes from the sample space which are required for given events.

3. Write down the outcomes in set notation.

By referring Exercise 1, the sample space for randomly drawing two marbles with replacement in succession from a box containing 10 white and 10 black marbles is

S = {bb, bw, wb, ww}

a.

Step 1: Define an event.

Define A: At least one marble of each color is drawn.

Step 2: Write the all outcomes for “at least one marble of each color is drawn”.

At least one marble of each color means the outcome contain one black marble and one white marble. The outcomes ‘bw’ and ‘wb’ denotes at least one marble of each color.
Therefore, the total outcomes for the event A “At least one marble of each color is drawn” are ‘bw’ and ‘wb’.

**Step 3:** Write down the outcomes in set notation.

The outcomes for the event A are \{bw, wb\}

**b.**

**Step 1:** Define an event.

Define B: No white marble is drawn.

**Step 2:** Write the all outcomes for “no white marble is drawn”.

No white marble is drawn means white marble is neither drawn in first draw nor in second draw. That means both marbles are black. The outcome ‘bb’ denotes “no white marble is drawn”.

Therefore, the total outcomes for an event B “No white marble is drawn” is ‘bb’

**Step 3:** Write down the outcomes in set notation.

The outcome for the event B is \{bb\}.

**Conclusion:**

The outcomes for each event are

- a. \{bw, wb\}
  - b. \{bb\}

Please let me know if you have any question on this problem, or on this topic generally. I will be here in the forum for the next hour.