## Math 1324 Section 6.4 Using Counting Techniques in Probability

The videos corresponding to this worksheet can be found at <a href="https://online.math.uh.edu/Math1324/">https://online.math.uh.edu/Math1324/</a>.

UH students can also view the videos within the Math 1324 textbook.

## Math 1324 Use of Counting Techniques in Probability

## Example 1

In this section, we will learn to compute probability when the sample space is too large to enumerate.

Recall that to compute the probability of an event in a uniform sample space, we found

$$P(E) = \frac{n(E)}{n(S)} = \frac{number\ of\ elements\ in\ event\ E}{number\ of\ elements\ in\ sample\ space\ S}$$

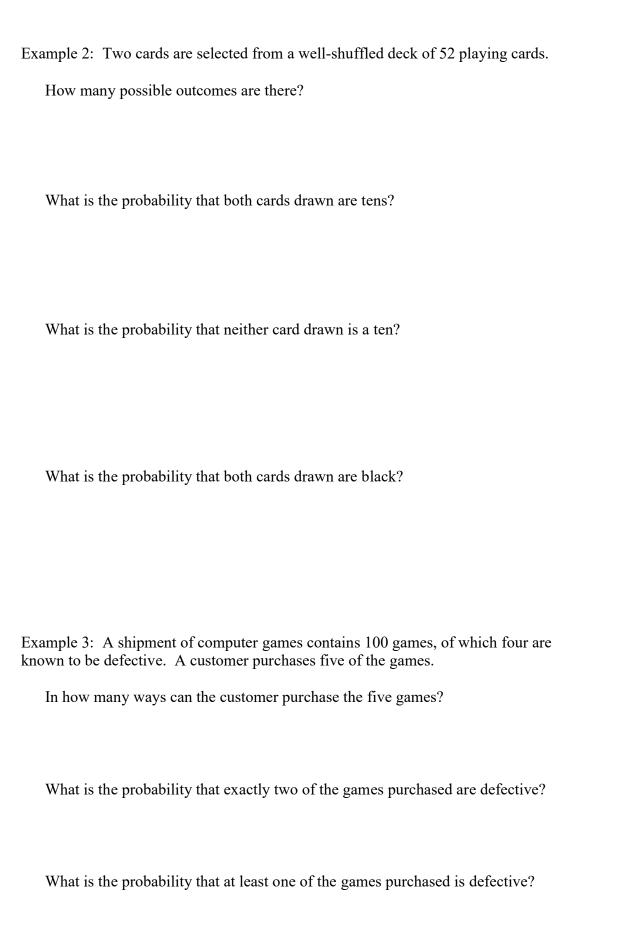
Example 1: Suppose we flip a fair coin six times and observe the sequence of heads and tails that results.

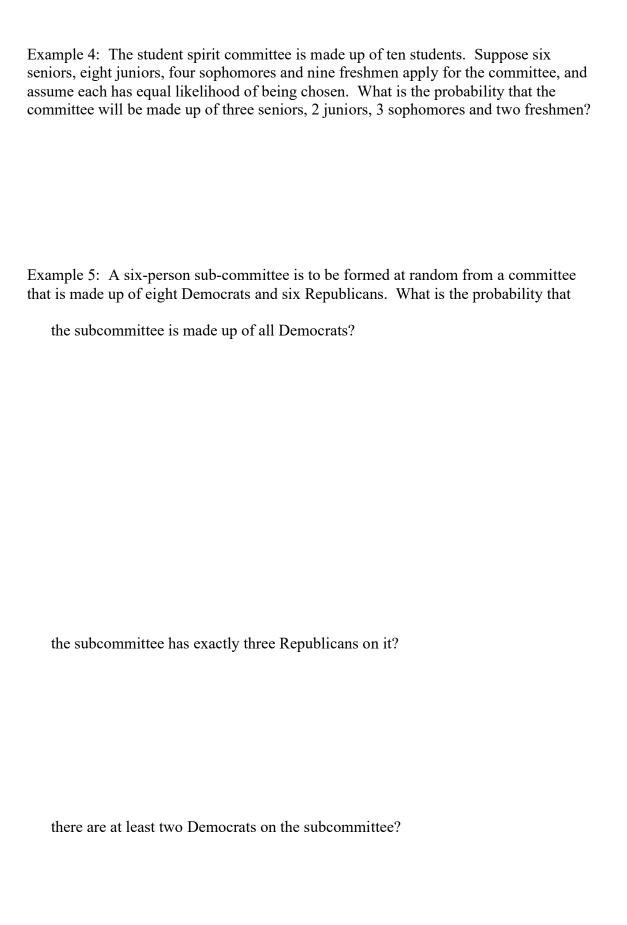
How many elements are in the sample space?

What is the probability that the coin will land heads exactly four times?

What is the probability that the coin will land heads at most two times?

What is the probability that the coin will land heads on the second and fifth tosses?





Example 6: An urn contains 12 white balls and 14 black balls. selected at random. What is the probability that	Ten of the balls are
at least 9 black balls are chosen?	
at most 8 black balls are chosen?	
3 black balls or 4 black balls are chosen?	