Intro to Geometry (HSS-CP.A.1)
Unit Six: Probability - Sample Space \& Uniform/Non-Uniform (IC1)

Name: $\qquad$ Key
Date: $\qquad$ Period: $\qquad$

| Theoretical Probability: <br> (thinking about what should be true) <br> Number of successful outcomes |
| :--- |
| $\frac{\text { Total number of outcomes }}{}$ |

## Experimental Probability:

(thinking about what happened in an experiment) Number of successful trials Total number of trials

## Sample Space:

Organized representation of the possible outcomes; many options but as a SET and a TREE DIAGRAM are common $\rightarrow$ so are tables.

Sample Space: (3 coin tosses)


Sample Space: (Choosing 2 marbles from a bag of
Tree diagram 4 whites and 3 reds $\left\{_{\{\text {Set notation\} }}\right.$

## Uniform:

A situation where all outcomes are equally likely

Non-Uniform:
A situation where all outcomes are NOT equally likely

1. One of the most common sample spaces is the rolling of 2 dice. Using the table on the left list all of the elements in the sample space and then on the table to the right sum the values for each of those elements.
(lists out comes more than once, so not technically sample space)

Sample Space for Rolling 2 Dice

|  | $\mathbf{1}$ | $\mathbf{2}$ | $\mathbf{3}$ | $\mathbf{4}$ | $\mathbf{5}$ | $\mathbf{6}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\mathbf{1}$ | $(1,1)$ | $(1,2)$ | $(1,3)$ | $(1,4)$ | $(1,5)$ | $(1,6)$ |
| $\mathbf{2}$ | $(2,1)$ | $(2,2)$ | $(2,3)$ | $(2,4)$ | $(2,5)$ | $(2,6)$ |
| $\mathbf{3}$ | $(3,1)$ | $(3,2)$ | $(3,3)$ | $(3,4)$ | $(3,5)$ | $(3,6)$ |
| $\mathbf{4}$ | $(4,1)$ | $(4,2)$ | $(4,3)$ | $(4,4)$ | $(4,5)$ | $(4,6)$ |
| $\mathbf{5}$ | $(5,1)$ | $(5,2)$ | $(5,3)$ | $(5,4)$ | $(5,5)$ | $(5,6)$ |
| $\mathbf{6}$ | $(6,1)$ | $(6,2)$ | $(6,3)$ | $(6,4)$ | $(6,5)$ | $(6,6)$ |

Sample space-for Sum of 2 Dice

|  | $\mathbf{1}$ | $\mathbf{2}$ | $\mathbf{3}$ | $\mathbf{4}$ | $\mathbf{5}$ | $\mathbf{6}$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $\mathbf{1}$ | $\mathbf{2}$ | $\mathbf{3}$ | 4 | 5 | 6 | 7 |
| $\mathbf{2}$ | 3 | 4 | 5 | 6 | 7 | 8 |
| $\mathbf{3}$ | 4 | 5 | 6 | 7 | 8 | 9 |
| $\mathbf{4}$ | 5 | 6 | 7 | 8 | 9 | 10 |
| $\mathbf{5}$ | 6 | 7 | 8 | 9 | 10 | 11 |
| $\mathbf{6}$ | 7 | 8 | 9 | 10 | 11 | 12 |

2. Use the sample space for the sums of 2 dice, create the bar graph of the values.

SUMS OF TWO DICE

a) What is the sample space size for rolling two dice? 36
b) What sum is mostly likely to be rolled with two dice? $\qquad$
c) How many times does that sum occur? $\qquad$
d) What is the probability of getting that sum? $\frac{6}{36}=\frac{1}{6}$
e) What sum(s) are least likely to be rolled with two dice? $\quad 2$ and 12
f) What is the probability of getting the least likely sum? $\frac{1}{36}$ for each

