**AP Statistics Guided Notes: Chapter 5.2**

Terminology

* Sample space “S”:
* Probability model:
* Event:
* Complement:
* Mutually exclusive (disjoint):

Notation & Probability Rules

The sample space S of the possible outcomes of a coin toss is written as: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The probability of event A happening is written as: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Basic Probability Rules**

* For any event A, $0\leq P(A)\leq 1$
* If S is the sample space in a probability model, $P\left(S\right)=1$
* In the case of equally likely outcomes,

$$P\left(A\right)=\frac{number of outcomes corresponding to event A}{total number of outcomes in the sample space}$$

* **Complement rule:** $P\left(A^{c}\right)=1-P(A)$
* **Addition rule for mutually exclusive events:** If A and B are mutually exclusive, $P\left(A or B\right)=P\left(A\right)+P(B)$

You try!

1. Imagine flipping a fair coin three times. Give a probability model for this chance process.

Possible outcomes for three coin flips:

S = { }

Since each coin is fair, each one of these \_\_\_\_\_ outcomes will be equally likely and have a probability of \_\_\_\_\_ / \_\_\_\_\_\_.

2. Randomly select a student who took the 2010 AP Statistics exam and record the student’s score. Here is the probability model:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Score: | 1 | 2 | 3 | 4 | 5 |
| Probability | 0.233 | 0.183 | 0.235 | 0.224 | 0.125 |

(a) Show this is a legitimate probability model (hint: use the basic rules for probability).

(b) Find the probability that the chosen student scored 3 or better (hint: use the basic rules for probability).