W01 Homework A

01

> ✎ **Sample space - roll a die, flip a coin**
>
> A normal 6-sided die is cast, and then a coin is flipped. All results are recorded.
>
> (a) Define a sample space for this experiment.
>
> (b) How many possible *events* are there?

✎ Sample space - roll a die then flip coin(s)

A normal 6-sided die is cast. If the result is even, flip a coin two times; if the result is odd, flip a coin one time. All results are recorded.

(a) Define a sample space for this experiment.

(b) How many possible *events* are there?

✏ **Venn diagrams - set rules and Kolmogorov additivity**

Suppose we know three probabilities of events: $P[A] = 0.4$, $P[B] = 0.3$, and $P[A \cap B] = 0.1$.

Calculate: $P[A \cup B]$, $P[A^c]$, $P[B^c]$, $P[A \cap B^c]$, and $P[(A \cap B)^c]$.

☑ At least two heads from three flips

A coin is flipped three times.

What is the probability that at least two heads appear?

✐ Conditioning

Student test-passing rates, by year:

	1st year	2nd year	3rd year	4th year
Pass	0.155	0.340	0.255	0.160
Fail	0.025	0.040	0.015	0.010

What is the likelihood that a randomly chosen 4th-year student passed the test?

What about for 1st-year students?