

# AI1110 Assignment 5

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## I. EXAMPLE 4

### Question:

A coin is tossed. If it shows head, we draw a ball from a bag consisting of 3 blue and 4 white balls; if it shows tail we throw a die. Describe the sample space of this experiment.

### Solution:

Let the elements of the sample space be denoted by  $(X, Y)$  where  $X$  is outcome of the first part of the experiment and  $Y$  is outcome of the second part of the experiment.

$X$  is an element of the set  $\{H, T\}$  where  $H$  denotes head and  $T$  denotes tail.

$Y$  is an element of the set  $\{B, W, D_1, D_2, D_3, D_4, D_5, D_6\}$  where  $B$  denotes blue ball,  $W$  denotes white ball,  $D_i$  denotes die with number  $i$  on top.

The sample space can be represented as

	$W$	$B$	$D_1$	$D_2$	$D_3$	$D_4$	$D_5$	$D_6$
$H$	$(H, W)$	$(H, B)$	-	-	-	-	-	-
$T$	-	-	$(T, D_1)$	$(T, D_2)$	$(T, D_3)$	$(T, D_4)$	$(T, D_5)$	$(T, D_6)$

The python code `codes/example_4.py` produces a theoretical probability distribution