Probability Exercises Lecture 1

1. $\Omega = \{1, 2, 3, \ldots\}$

2. $\Omega = \{2, 3, 4, \ldots\}$

3. $\Omega = \{0, 1, 2, 3, \ldots\}$

4. (i) $A = \{HTT, THT, TTH\}$

$B = \{HTT, THT, TTH, TTT\}$

$C = \{HTT, HHT, HTH, HHH\}$ every time

$D = \{THH, THT, TTH, TTT\}$

(ii) $A^c = \{HHH, THH, HTH, HHT, TTT\}$

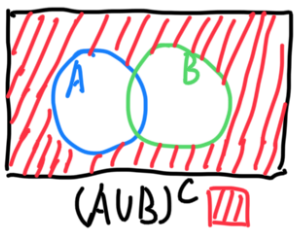
$A \cup (C \cap D) = (A \cup C) \cap (A \cup D) = \{HTT, THT, TTH, HHT, HTH, HHH\}$ TTT

$\cap \{HTT, THT, TTH, THH, TTT\}$

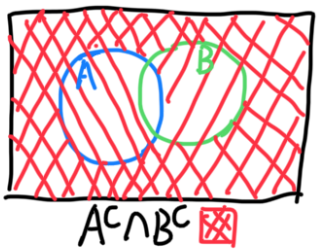
$= \{HTT, THT, TTH\}$ TTT

$A \cap D^c = \{HTT\}$

5. (i)

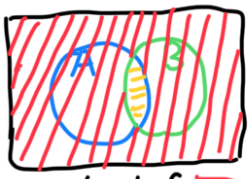


$(A \cup B)^c$

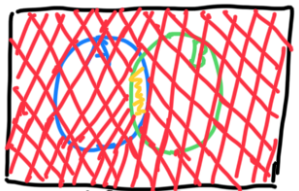


$A^c \cap B^c$

(ii)



$(A \cap B)^c$



$A^c \cup B^c$

6. $C = (A \cup B) \cap (A \cap B)^c$