

Roll two dice

	1	2	3	4	5	6
1	1,1	1,2	1,3	1,4	1,5	1,6
2	2,1	2,2	2,3	2,4	2,5	2,6
3	3,1	3,2	3,3	3,4	3,5	3,6
4	4,1	4,2	4,3	4,4	4,5	4,6
5	5,1	5,2	5,3	5,4	5,5	5,6
6	6,1	6,2	6,3	6,4	6,5	6,6

$$S = \{(1,1), (1,2), (1,3), \dots, (6,6)\}$$

$$= \{(i,j) \mid \begin{array}{l} 1 \leq i \leq 6 \text{ represents red die} \\ 1 \leq j \leq 6 \text{ represents green die} \end{array}\}$$

E.g. Event A that the sum of the two dice is at most 4 is

$$A = \{(i,j) \mid \begin{array}{l} 1 \leq i \leq 6, 1 \leq j \leq 6, \\ \text{and } i+j \leq 4 \end{array}\}$$

$$= \{(1,1), (1,2), (1,3), (2,1), (2,2), (3,1)\}$$

A^c has 30 outcomes.

Notice $A \cup A^c = S$

Say B is the event that the red die shows 1 and the green die does not exceed 3.

$$B = \{(1,1), (1,2), (1,3)\}$$

B is a subset of A i.e. $B \subset A$