

**Chapters 11 & 12****SAMPLE SPACE FOR A STANDARD DECK OF CARDS**

|                                | King                                                                              | Queen                                                                             | Jack                                                                              | 10                                                                                | 9                                                                                 | 8                                                                                 | 7                                                                                 | 6                                                                                   | 5                                                                                   | 4                                                                                   | 3                                                                                   | 2                                                                                   | Ace                                                                                 |
|--------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>Spades</b><br>(black cards) |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <b>Clubs</b><br>(black cards)  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <b>Diamonds</b><br>(red cards) |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <b>Hearts</b><br>(red cards)   |  |  |  |  |  |  |  |  |  |  |  |  |  |

**SAMPLE SPACE FOR THE TOSS OF TWO DICE**

| D2 | 1     | 2     | 3     | 4     | 5     | 6     |
|----|-------|-------|-------|-------|-------|-------|
| D1 |       |       |       |       |       |       |
| 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) |

**Outcomes when Tossing 3 Coins**

|     |     |     |     |
|-----|-----|-----|-----|
| HHH | HHT | HTH | HTT |
| THH | THT | TTH | TTT |

**Outcomes when Tossing 4 Coins**

|      |      |      |      |
|------|------|------|------|
| HHHH | HHHT | HHTH | HTHH |
| THHH | HHTT | HTHT | HTTH |
| THTH | TTHH | THHT | TTTH |
| TTHT | THTT | HTTT | TTTT |

$$P(n, r) = \frac{n!}{(n-r)!}$$

$$C(n, r) = \frac{n!}{r!(n-r)!}$$

$$P(E) = \frac{n(E)}{n(S)}$$

$$P(A \text{ or } B) = P(A) + P(B) - P(A \cap B)$$

$$P(A \text{ and } B) = P(A) \bullet P(B)$$

$$\text{Odds in Favor} = \frac{P(E)}{P(E')}$$

$$\text{Odds Against} = \frac{P(E')}{P(E)}$$

$$P(E') = 1 - P(E)$$