

A jar has 20 marbles in it: 4 Blue marbles, 6 Red marbles, 2 White marbles, and 8 Green marbles

You pick one marble from the jar. Calculate the following:

- ① Probability of picking a Green marble:

$$P(G) = \frac{8 \leftarrow \# \text{ of Green marbles}}{20 \leftarrow \text{total \# of marbles}} = \boxed{\frac{2}{5}} \quad 40\%$$

- ② Probability of picking a Red marble:

$$P(R) = \frac{6 \leftarrow \# \text{ of Red marbles}}{20 \leftarrow \text{total \# of marbles}} = \boxed{\frac{3}{10}} \quad 30\%$$

The Probability of an Event:

$$P(E) = \frac{\# \text{ of "winners" }}{\text{total \# of outcomes}}$$

- ③ The Odds of picking a Blue marble:

$$O(B) = \frac{4}{16} = \boxed{1:4}$$

↑
of Blue marbles

↑
of marbles that are NOT Blue

for every 1 Blue marble, there are 4 Not-Blue marbles

The Odds of an Event:

$$O(E) = \frac{\# \text{ of "winners" }}{\# \text{ of "losers" }}$$

ex Rolling a six-sided die (number cube).

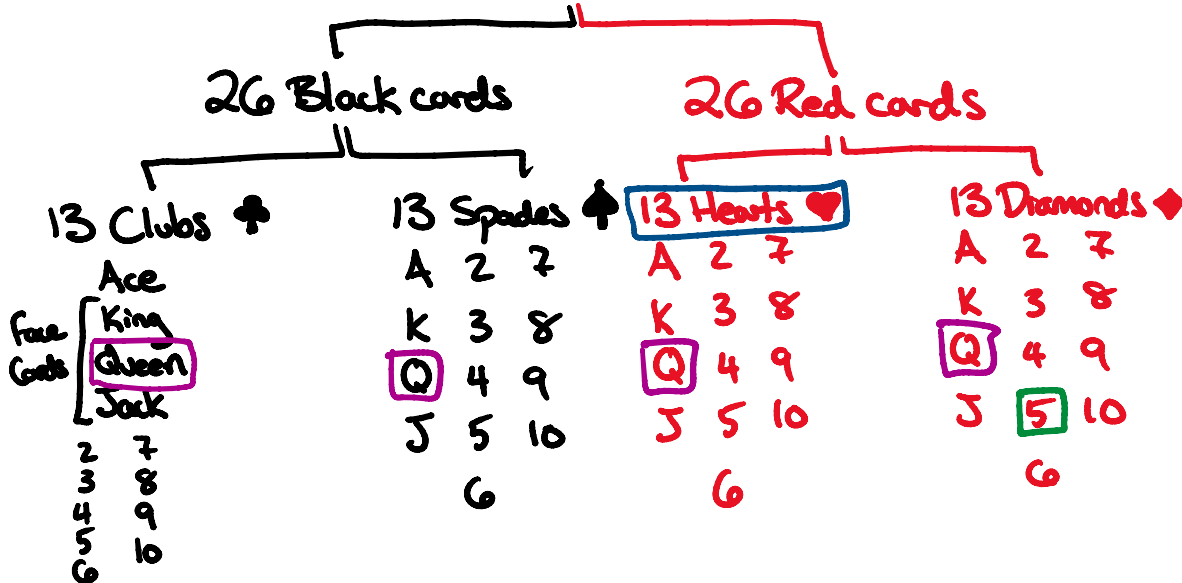
1 ← winners 5 ← losers 1:5

ex Rolling a six-sided die (number 1-6).

$$P(4) = \frac{1 \leftarrow \text{winners}}{6 \leftarrow \text{total}} \quad O(4) = 1 : 5$$

$\uparrow$ $\uparrow$ $\uparrow$ $\uparrow$
 What is the probability What are the odds
 of rolling a 4? of rolling a 4?

ex Deck of cards: 52 total cards



$$P(Q) = \frac{4}{52} = \frac{1}{13} \quad 7.7\%$$

$$P(H) = \frac{13}{52} = \frac{1}{4} \quad 25\%$$

$$P(5\spadesuit) = \frac{1}{52} \quad 2\% \quad O(5\spadesuit) = 1 : 51$$