INDEPENDENT AND DEPENDENT PROBABILITY

Independent event - The outcome of the first event does not affect the outcome of the second event

If there are 4 boys and 5 girls what is the probability of selecting a boy?

If there are 6 green marbles and 7 red marbles, what is the probability of selecting a green marble?

These events are independent. No matter what happens in the first event, the probability of the second event remains the same

If there are 4 boys and 5 girls what is the probability of selecting a boy?

If the person I select is no longer allowed to participate, what is the probability of selecting a boy?

These events are dependent. After I select my first pick, the probability will change for the second pick.

If there are 4 boys and 5 girls what is the probability of selecting a boy?

If the person I select is allowed to participate in the group again, what is the probability of selecting a boy?

These events are independent. No matter what happens in the first event, the probability of the second event remains the same
There are 4 boys and 5 girls. 
There are 6 green marbles and 3 red marbles. 

What is the probability of choosing a boy and a red marble?

Probability of choosing a boy is \( \frac{4}{9} \)

Probability of choosing a red marble is \( \frac{3}{9} \)

The probability of choosing a boy and a red marble is

(to find this we multiply both probabilities)

\[
\frac{4}{9} \cdot \frac{3}{9} = \frac{12}{81} = \frac{4}{27}
\]

If there are 4 boys and 5 girls what is the probability of selecting a boy? \( \frac{4}{9} \)

If the person I select is no longer allowed to participate, what is the probability of selecting a boy? \( \frac{4}{8} \)

What is the probability of choosing a boy both times?

(to find this we multiply both probabilities)

\[
\frac{4}{8} \cdot \frac{4}{9} = \frac{16}{72} = \frac{2}{9}
\]
What is the probability of one spinner landing on a "1" and the other spinner landing on a "p"?

Sometimes it is necessary to draw a tree diagram to determine all the possible outcomes.

There are 6 possible outcomes. There's 1 chance of the outcome being a "1" and a "p".

The probability of getting a "1" and a "p" is $\frac{1}{6}$. 
Odds of an event is a ratio expressing the likelihood of an event happening.

A bag contains 6 red marbles, 2 yellow marbles and 1 blue marble.

What are the odds of selecting a yellow marble?

Since there are 2 yellow marbles, \(2\) is the favorable amount.

Since there are 7 non-yellow marbles, \(7\) is the unfavorable amount.

The odds of selecting a yellow marble is \(\frac{2}{7}\).