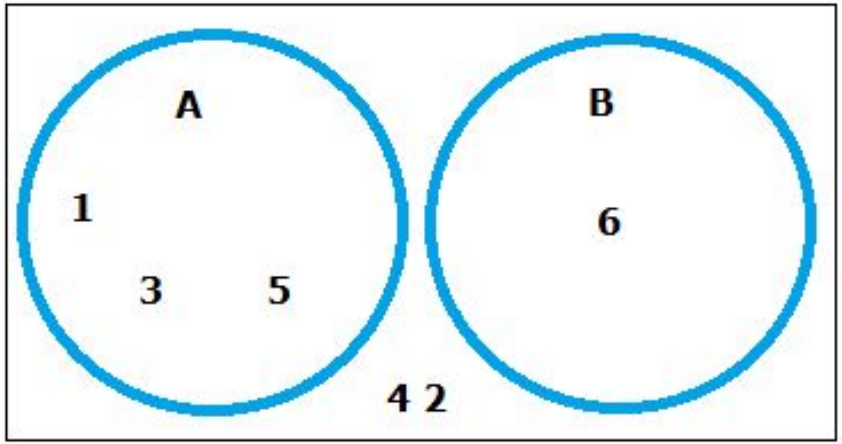
Theoretical vs Experimental Probability

When drawing the cards, why did we have to replace and shuffle the cards in between each drawing?

Overlapping vs Disjoint Events

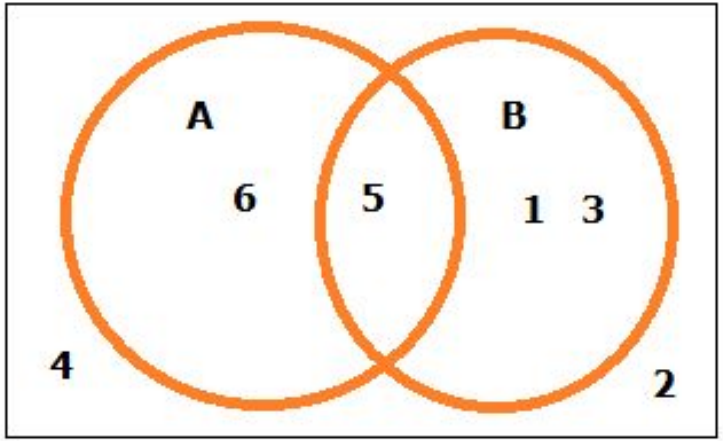
Disjoint Events

Event A: Get an odd Number
Event B: Get a 6



Overlapping Events

Event A: Get a number over 4
Event B: Get an odd number



Probability of Compound Events

If *A* and *B* are any two events, then the probability of *A* or *B* is:

P(*A* or *B*) = P(A) + P(B) - P(A and B)

If *A* and *B* are ***disjoint*** then the probability is:

P(*A* or *B*) = P(A) + P(B)

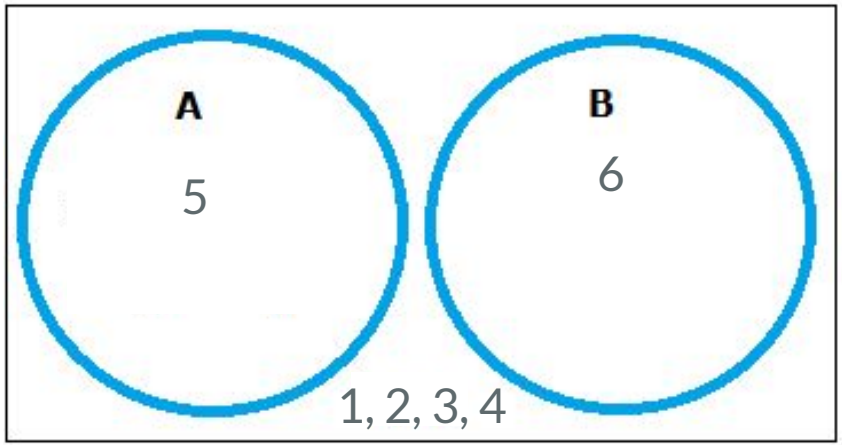
Number 6 on your worksheet:

The probability of rolling a number greater than 4

P(*A* or *B*) = P(A) + P(B) - P(A and B)

Event A: Roll a 5

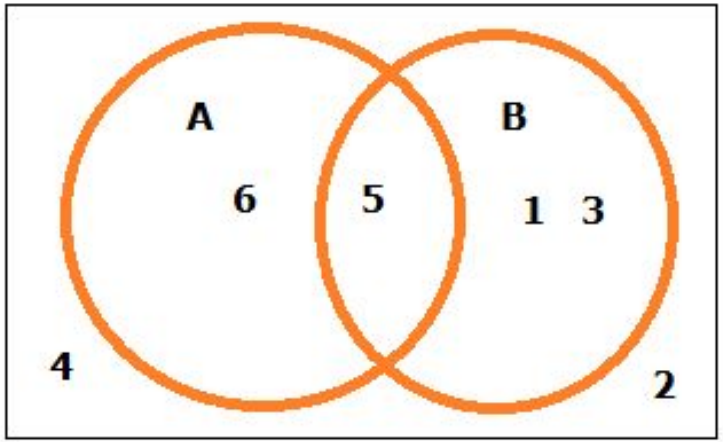
Event B: Roll a 6



The probability of rolling a number greater than 4 or an odd number:

P(*A* or *B*) = P(A) + P(B) - P(A and B)

Event A: Get a number over 4
Event B: Get an odd number



The probability of rolling an even number or a number less than 5:

Suppose students are only allowed to take Calculus or Stats. Out of 100 students, 35 take calculus, 20 take stats, and the rest take something else.

If we randomly select 1 student out of the 100, what is the probability of picking a student taking calculus or stats?

Out of 100 seniors, 92 either are taking AP US History or AP Language.

Of the 100, 65 are taking AP US History, and 82 are taking AP Language.

If a random senior is selected, what is the probability that they are in *both* AP Language and AP US History?

Probability of the Complement of an Event

The Complement is everything not included in a set.

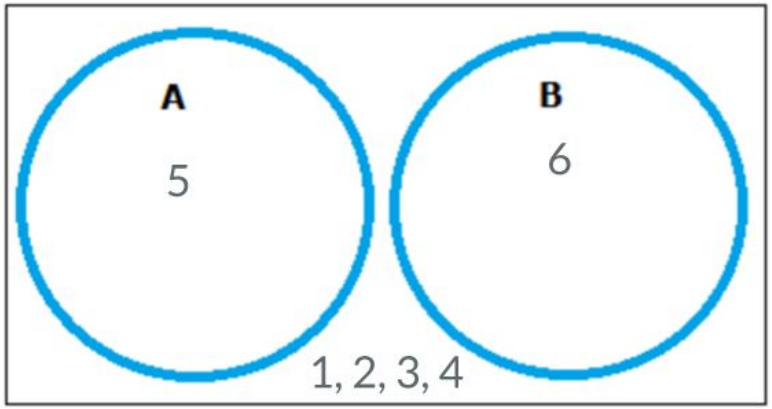
The complement of P(A or B) is everything not in *A* or *B*, in this case it would be rolling a 1, 2, 3, or 4.

Probability that we roll a number not greater Than 4 is:

= 1 - P(*A* or *B*)

Event A: Roll a 5

Event B: Roll a 6



A card is drawn at random from a standard deck of 52 cards. Find the probability that it is *not* a face card.

There are 5 people at a dinner party at a restaurant. The restaurant gives out fortune cookies at the end of the meal to each person and there are 100 unique messages that they print for the cookies.

What is the probability that at least 2 people get the same message inside their cookie?

There are 6 people in a room. What is the probability that at least 2 of them have the same birthday?