

Guided Notes: Mutually Exclusive and Inclusive Events

Mutually Exclusive Events

Suppose you are rolling a six-sided die. What is the probability that you roll an odd number or you roll a 2?

- Can these both occur at the same time? Why or why not?

Mutually Exclusive Events:

- The probability of two mutually exclusive events occurring at the same time, $P(A \text{ and } B)$, is _____

To find the probability of one of two **mutually exclusive** events occurring, use the following formula:

Examples:

1. If you randomly chose one of the integers 1 – 10, what is the probability of choosing either an odd number or an even number?

Are these mutually exclusive events? Why or why not? _____

Complete the following statement:

$$P(\text{odd or even}) = P(\text{____}) + P(\text{____})$$

Now fill in with numbers:

$$P(\text{odd or even}) = \text{____} + \text{____} = \text{_____}$$

Does this answer make sense? _____

2. Two fair dice are rolled. What is the probability of getting a sum less than 7 or a sum equal to 10?

Are these events mutually exclusive? _____

Sometimes using a table of outcomes is useful. Complete the following table using the sums of two dice:

	1	2	3	4	5	6
1	2	3	4	5	6	7
2	3	4				
3	4					
4						
5						
6						

$P(\text{getting a sum less than 7 OR sum of 10}) = \text{_____}$

This means _____

Mutually Inclusive Events

Suppose you are rolling a six-sided die. What is the probability that you roll an odd number or a number less than 4?

- Can these both occur at the same time? If so, when?

Mutually Inclusive Events:

Probability of the Union of Two Events: The Addition Rule:

Examples:

1. What is the probability of choosing a card from a deck of cards that is a club or a ten?
 $P(\text{choosing a club or a ten}) =$

2. What is the probability of choosing a number from 1 to 10 that is less than 5 or odd?

3. A bag contains 26 tiles with a letter on each, one tile for each letter of the alphabet. What is the probability of reaching into the bag and randomly choosing a tile with one of the first 10 letters of the alphabet on it or randomly choosing a tile with a vowel on it?

4. A bag contains 26 tiles with a letter on each, one tile for each letter of the alphabet. What is the probability of reaching into the bag and randomly choosing a tile with one of the last 5 letters of the alphabet on it or randomly choosing a tile with a vowel on it?