1.2 Visualizing Probability

Sometimes it's easier for us to create a visual representation of the situation to help us better understand probability. This section explores how Venn Diagrams can be used to illustrate complicated probability situations.

A. Methods of Visualizing Probability

1. Outcome Tables	2. Tree Diagrams	3. Venn Diagrams
Create an outcome table to determine the probability of getting 8 when you roll 2 dice.	Create a tree diagram to determine the probability of getting at least 2 heads when flipping 3 coins.	Create a Venn Diagram to illustrate the number of red jacks in a standard deck of cards.

B. Mutually Exclusive Sets

Mutually Exclusive Sets
Sometimes called *Disjoint Sets*

Non-Mutually Exclusive Sets

How to describe the regions:

Intersection n(in both A AND B) or $n(A \cap B)$	
Mutually Exclusive Sets $n(A \cap B) =$	Non-Mutually Exclusive Sets $n(A \cap B) =$

Union n(in A OR B) or $n(A \cup B)$	
Mutually Exclusive Sets $n(A \cup B) =$ $P(A \cup B) =$	Non-Mutually Exclusive Sets $n(A \cup B) =$ $P(A \cup B) =$

Example 1:

16 people study French, 21 study Spanish and there are 30 altogether. What are the probabilities of each option happening?

Example 2: Mr Notten teaches 49 different students in 3 of his classes. He has…

- 13 students in his Period 2 class only
- 7 students in his Period 3 class only
- 16 students in his Period 4 class only
- 4 students in his Period 2 and 3 classes
- 5 students in his Period 2 and 4 classes
- 1 student in his Period 3 and 3 classes
- 3 students in his Period 2, 3 and 4 classes

a) Draw a Venn diagram of the situation

b) Use the Venn diagram to find out how many students are in each of his classes

c) What mathematical stament can you use to represent **all** the students in Mr Notten's classes?

d) What mathematical statement can you use to represent the region **you** fall in? Shade it in on the Venn Diagram.

Example 3:

A card is randomly selected from a standard deck of cards. What is the probability that either a heart or a face card is selected?

Example 4:

A park has 220 campsites. A total of 80 sites have electricity. Of the 52 sites on the lakeshore, 22 of them have electricity. If the site is selected at random, what is the probability that it will either have electricity or be on the lakeshore?

Example 5:

In our data class of 27 students, there are 10 students with brown hair and 7 that wear contacts. There are 3 students with brown hair and have contacts. What is the probability that a student selected at random does not have brown hair or glasses?

Extra practice: Textbook Pg 228 #1 - 12, 15