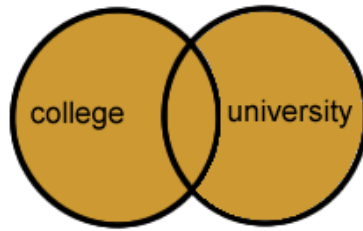


Boolean Basics

Boolean logic refers to the logical relationship among search terms, and is named for the British-born Irish mathematician George Boole. Boolean logic consists of three primary logical operators: OR, AND, and NOT. Each operator can be visually described by using Venn diagrams, as shown below.

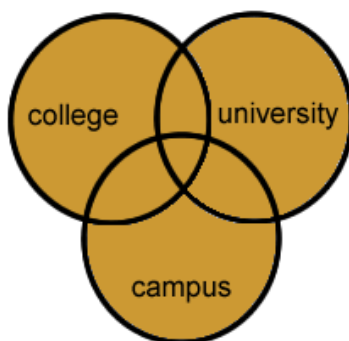
OR logic

Search: college OR university



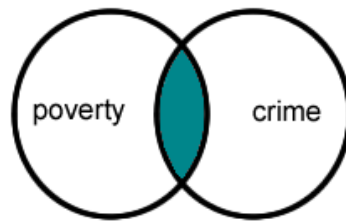
- This search will retrieve records in which AT LEAST ONE of the search terms is present. We are searching for the terms **college** and also **university** since documents containing either of these words might be relevant.
- This is illustrated by:
 - the shaded circle with the word **college** representing all the records that contain the word "college"
 - the shaded circle with the word **university** representing all the records that contain the word "university"
 - the shaded overlap area representing all the records that contain both "college" and "university"

OR logic is most commonly used to search for synonymous terms or concepts. OR logic collates the results to retrieve all the unique records containing one term, the other term, or both of them. The *more* terms or concepts we combine in a search with OR logic, the *more* results we will retrieve.



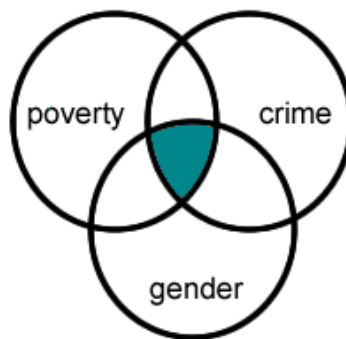
AND logic

Search: poverty AND crime



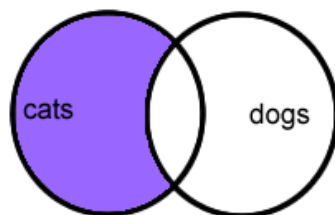
- In this search, we retrieve records in which BOTH of the search terms are present
- This is illustrated by the shaded area overlapping the two circles representing all the records that contain both the word "poverty" and the word "crime"
- Notice how we do not retrieve any records with only "poverty" or only "crime"

The *more* terms or concepts we combine in a search with AND logic, the *fewer* results we will retrieve.



NOT logic

Search: cats NOT dogs

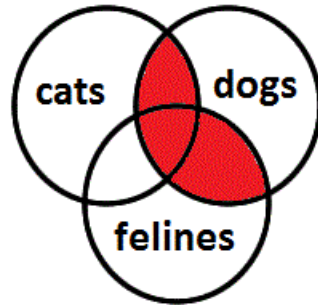


- In this search, we retrieve records in which ONLY ONE of the terms is present, the one we have selected by our search
- This is illustrated by the shaded area with the word **cats** representing all the records containing the word "cats"
- No records are retrieved in the area overlapping the two circles where the word "dogs" appears, even if the word "cats" appears there too

NOT logic excludes records from your search results. Be careful when you use NOT: the term you do want may be present in an important way in documents that also contain the word you wish to avoid. For example, consider a search result that includes the statement that "cats are smarter than dogs." The search illustrated above would exclude this document from your results.

Combined AND and OR logic

Search: dogs AND (cats OR felines)



You can combine both AND and OR logic in a single search, as shown above.

The use of parentheses in this search is known as forcing the order of processing. In this case, we surround the OR words with parentheses so that the search engine will process the two related terms as a unit. The search engine will use AND logic to combine this result with the second concept. Using this method, we are assured that the semantically-related OR terms are kept together as a logical unit.