Section 6.2 - The Number of Elements in a Finite Set

Let A be a set, then **n(A)** is the

Example 1: Let A = {1, 2, 3, …, 19, 20} and B = {q, s, t, v}.

Find:

a. n(A) =

b. n(B) =

c. n(∅) =

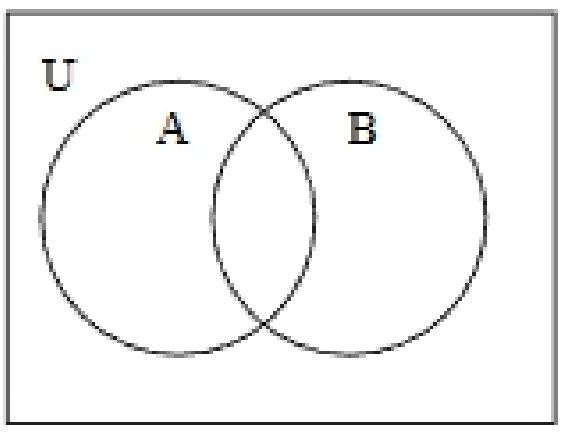
Given two sets A and B:

1. If A and B are disjoint then $n(A \cup B) = n(A) + n(B)$.

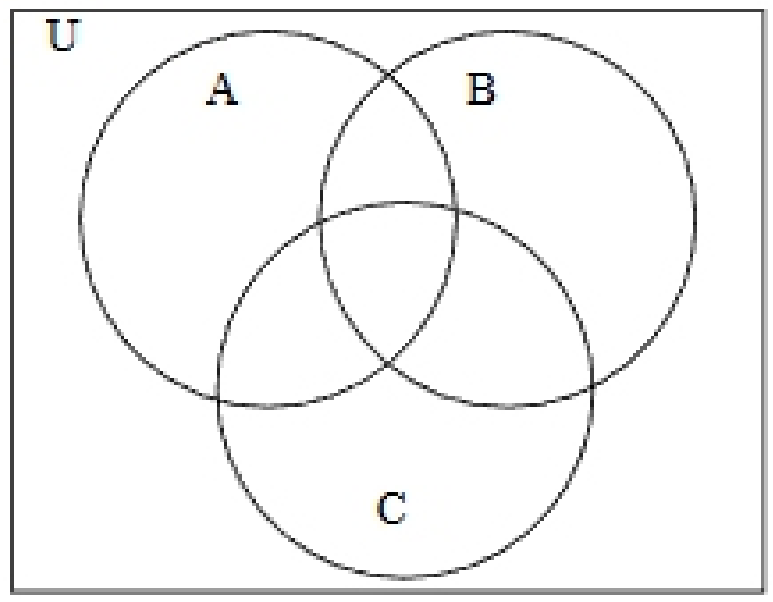
2. If A and B are not disjoint then $n(A \cup B) = n(A) + n(B) - n(A \cap B)$

Example 2: Let A and B be subsets of a universal set U. Given that n(B) = 9, $n(A \cap B) = 5$, and $n(A \cup B) = 20$, find n(A).

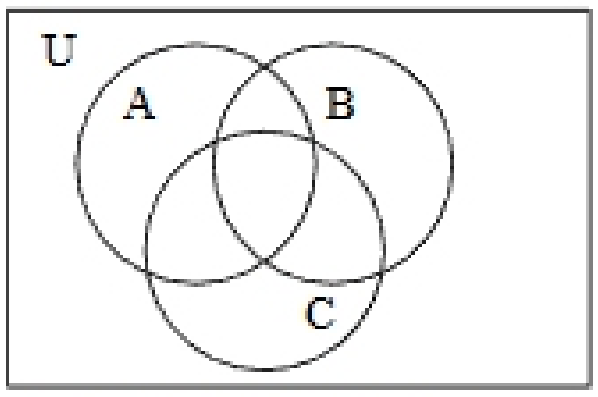
Example 3: Let A and B be subsets of a universal set U. Given that n(A) = 8, $\mathbf{n(A^c \cap B) = 7}$, $n(A \cap B) = 4$, and $n(A \cup B)^c = 9$, find $n(A \cup B^c)$.



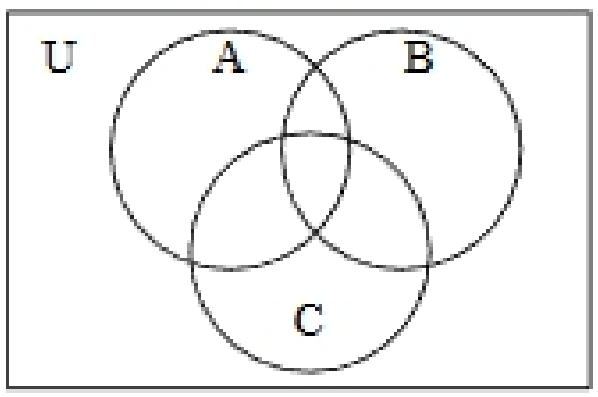
Example 4: Let $n(U) = 77$, $n(A) = 45$, $n(B) = 40$, $n(C) = 41$, $n(A \cap B) = 24$, $n(B \cap C) = 22$, $n(A \cap C) = 30$, and $n(A \cap B \cap C) = 16$. Find the number in each of the following sets.



a. $n[(A \cup B) \cap C] =$

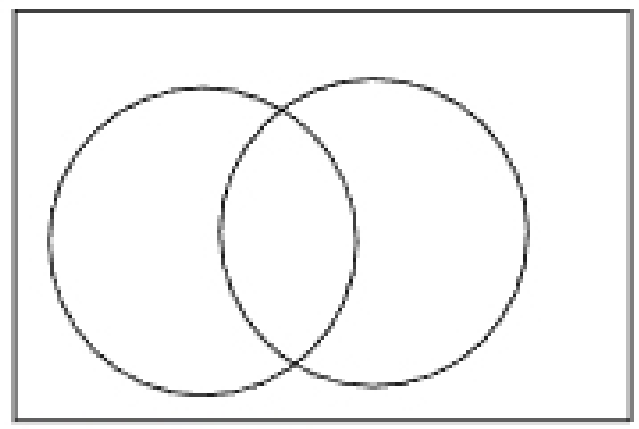


b. $n[(B \cap C)' \cup A] =$



Example 5: In a survey of 374 coffee drinkers it was found that 227 take sugar, 245 take cream, and 163 take both sugar and cream with their coffee.

Define your sets first.



a. How many coffee drinkers take sugar or cream with their coffee?

b. How many take sugar only?

c. How many do not take sugar or cream?

d. How many take sugar or cream, but not both?

Example 6: A researcher collecting data on 100 students finds out that 56 have a desktop computer and 21 laptop computer and 12 students had both. How many students have a laptop computer but no desktop computer (or have a laptop only)? How many students do not have a desktop or laptop computer?