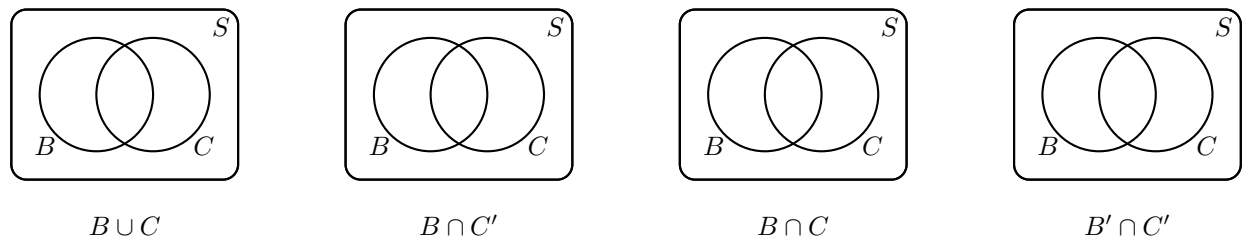


In Class Exercise # 7: Introduction to Probability

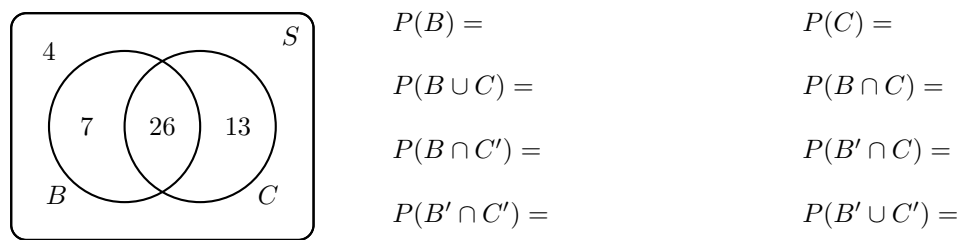
1. Military Hardware for Dairy Products

According to a book on New Zealand farming, Moscow offered to give NZ a nuclear submarine, MiG jets and tanks to help settle Russia’s debt for dairy products. When told that NZ had a nuclear-free policy, Moscow’s response was: “tie it up in some port and connect it to the national grid”¹.

Residents in Auckland were asked if they had purchased NZ butter, or NZ cheese, or both within the last week. Let B and C represent the events that a resident bought butter or cheese respectively. Shade in the areas which match the set notation.



We are now given that there are _____ inhabitants in total and they responded as follows:



2. Swiss Army

Shortly before World War I, the German Kaiser was the guest of the Swiss government to observe military maneuvers. The Kaiser asked a Swiss militiaman: “You are 500,000 and you shoot well, but if we attack with 1,000,000 men what will you do?” The soldier replied: “Shoot twice and go home”².

At the beginning of their training, all army recruits for the Swiss Army are given a test on marksmanship. The score out of 100 for a group of recruits is shown in the table below.

Score on Test	Number of Recruits
$0 \leq x < 20$	12
$20 \leq x < 40$	18
$40 \leq x < 60$	23
$60 \leq x < 80$	37
$80 \leq x \leq 100$	10

- (a) What is the probability that a randomly selected recruit earned at least 60 on the test? _____
- (b) What is the probability that a randomly selected recruit scored less than 40 on the test? _____
- (c) What is the probability that a randomly selected recruit earned either less than 20 or at least 80 on the test? _____

¹<https://www.theguardian.com/world/2013/oct/15/russia-offered-newzealand-military-hardware>
²<https://www.reuters.com/article/us-swiss-bunkers-widerimage/a-room-without-a-view-second-life-for-swiss-army-bunkers-idUSKBN0UL1I220160107>

3. **Dice**

The dots on a die are called “pips”, and certain combinations have specific names attached to them. If you roll two dice, and get a ones on both of them, then you would have hit “snake eyes”; a double six is known as “midnight”, while matching fives are “puppy paws”. Roll two fours and you’ll have a square pair, two times three are “Brooklyn forest”, and matching twos are called ballerinas (because they wear tutus)!³

Two fair dice are rolled together, and the sum of their dots are observed. To help you work it out the sums, fill out the table below:

+	1	2	3	4	5	6
1						
2						
3						
4						
5						
6						

- (a) How many elements are in the sample space, S ? _____
- (b) What is the probability the sum of the two dice is seven? _____
- (c) What is the probability the sum of the two dice is two or twelve? _____
- (d) What is the probability the sum of the two dice is five and ten? _____

³<https://vitalvegas.com/colorful-nicknames-dice-combinations-craps/>