




## Pokémath: Group Work 2

Name \_\_\_\_\_, \_\_\_\_\_

Pokémon® continue to go missing around the city. Witnesses have described a sinister team stealing Pokemon, but we are no closer to uncovering their identity. Professor Kit has tasked you and your rival to explore Iowa City to uncover the truth.

You and your rival will need Pokémon® that can help you on your journey. Today we will organize our sets of starter Pokémon® to help pick the best one!

Popular curves:

Bulbasaur-like curve	Charmander-like curve	Squirtle-like curve
		

1) The Pokémon® Professor currently has 45 Gen 1 Starter Pokémon in her bag. For this assignment  $\mathcal{U} = \{\text{Pokémon}^\circ \mid \text{in the Professor's bag}\}$ . Of these, 24 are Bulbasaur, 14 are Charmander and 7 are Squirtle. Let's say **B is the set of Bulbasaur**, **C is the set of Charmander**, and **S is the set of Squirtle**. 15 of the Bulbasaur, 6 of the Charmander and 2 of the Squirtle have CP above 500.

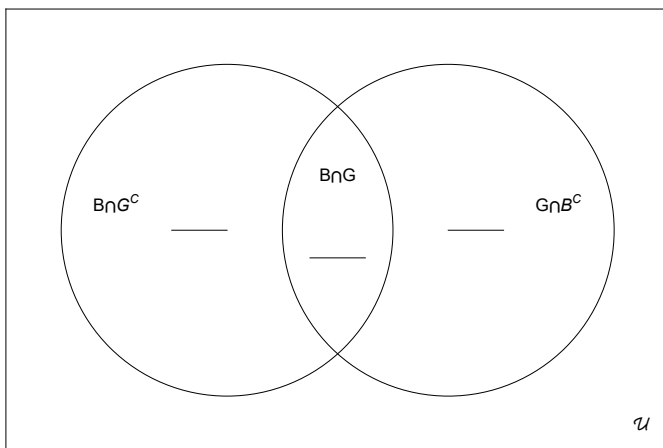
Say  $G = \{\text{Bulbasaurs, Charmanders, and Squirtles in } \mathcal{U} \mid \text{CP is above 500}\}$

a) Find  $n(S \cap G)$

b) Find  $n(G^c)$

c) Find  $n(C \cup G^c)$

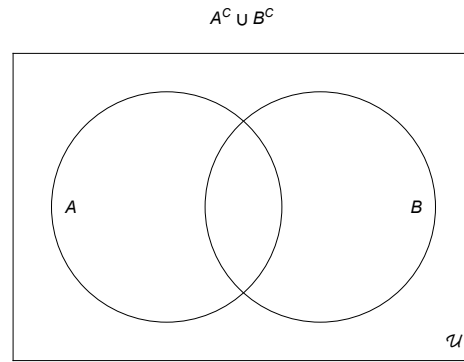
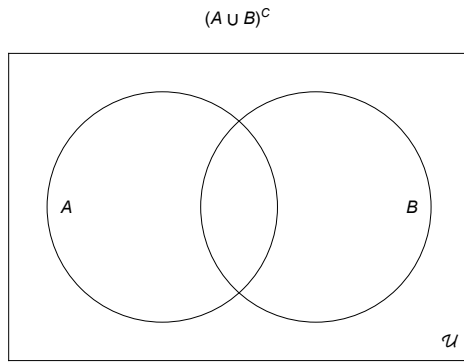
e) Find and fill in the number in each area of the Venn diagram. Watch out for the double counting error!



2) Check if the following relationships hold true by shading the Venn diagrams for each set in the relationship to see if they are in fact the same set. Hint: you should get two answers false, one answer true.

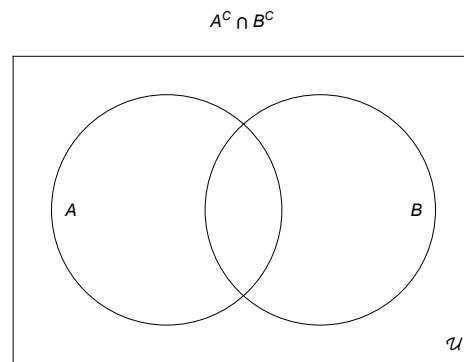
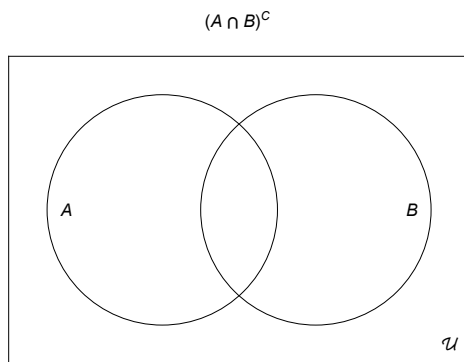
a)  $(A \cup B)^c \stackrel{?}{=} A^c \cup B^c$

(In words: Is the complement of the union the same as the union of the complements?)



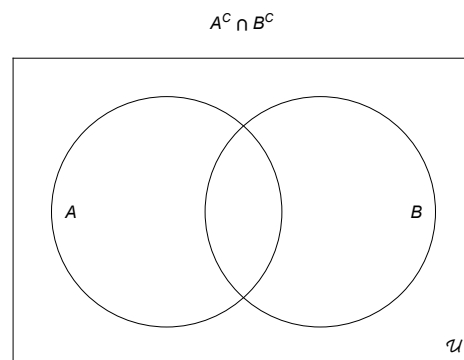
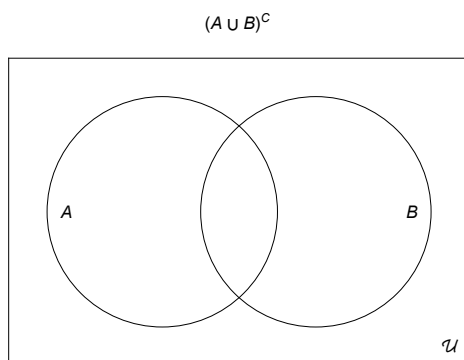
b) a)  $(A \cap B)^C \stackrel{?}{=} A^C \cap B^C$

(In words: Is the complement of the intersection the same as the intersections of the complements?)



c)  $(A \cup B)^C \stackrel{?}{=} A^C \cap B^C$

(In words: Is the complement of the union the same as the intersections of the complements?)



3) The Professor chose Bulbasaur for her starter because her rival always chooses Squirtle. Search in your Pokémon® Bag to find out how many Bulbasaur, Squirtle, and Charmander you have. Note which one is the most common. Note which one has the highest CP. Now choose your starter between these three. Explain below why you chose that Pokémon® to be your starter.