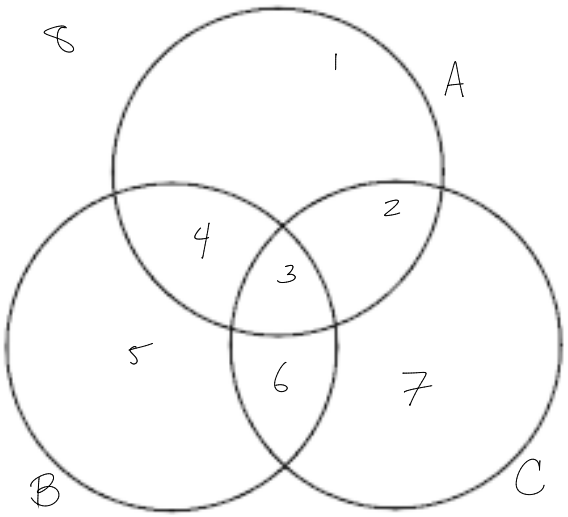
MATH 328: Written Assignment 1 **Due: Tuesday, February 13, 2018**

Show all appropriate work.

---

1. (a) Give four different sample spaces to describe three tosses of a coin.
   (b) For each of your sample spaces in part (a), give the event corresponding to the statement "at most one tails is obtained," if possible.
   (c) Is it possible to find an event corresponding to the above statement in every possible sample space for the tossing of three coins? Explain.

2. Three people are asked on a news show before an election whether they prefer candidate A or B or have no preference. Give two sample spaces for the possible answers.



3. Considering the given Venn diagram identify by numbers the following sets:
   (a) $(A \cup B) \cap C$.
   (b) $\bar{A} \cap (\bar{B} \cap C)$.
   (c) $A - (B \cap C)$.

4. Using the same Venn diagram, show that in general:
   (a) $A \cap (B \cup C) \neq (A \cap B) \cup C$, but
   (b) $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$,
   (c) $(A \cap B) \cup C = (A \cup C) \cap (B \cup C)$.

5. Show that $A \subset B$ if and only if $A \cap B = A$.