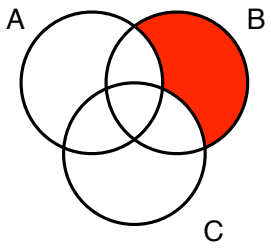
Math 111: Introduction to Probability
Quiz 1 — February 5th, 2007 Name: _____

This quiz covers material from sections 6.1–6.2. Show your work.

1. (*1 point*) Make a Venn diagram of the sets A, B, and C (assume there are members in every intersection, that is, they all overlap). Shade the region corresponding to $(A \cup C)^c \cap B$.



2. (*3 points*) Let $U = \{a, b, c, d, e, f, g\}$, $A = \{b, e\}$, $B = \{a, b, d, e\}$, and $C = \{c, d, e, g\}$. Find:

a. (*1 pt*) B^c

$\mathbf{B^c = \{c, f, g\}}$

b. (*1 pt*) $A \cap C^c$

$\mathbf{A \cap C^c = \{b\}}$

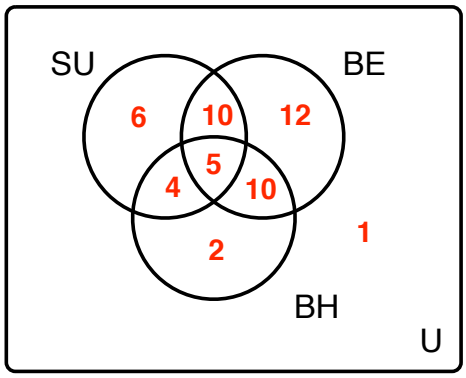
c. (*1 pt*) $A^c \cup C$

$\mathbf{A^c \cup C = \{a, c, d, e, f, g\}}$

3. (*4 points*) In a survey of 50 students regarding textbook purchases, the following information was obtained:

25 students had purchased books at the student union.
37 students had purchased books at the book exchange.
21 students had purchased books at bookholders.
15 students had used both the student union and the book exchange.
9 students had used both the student union and bookholders.
15 students had used both the book exchange and bookholders.
5 students used all three locations to buy books.
1 student bought all her books online and so used none of the three.

a. (*2 pts*) Draw a Venn Diagram that accurately depicts this information. Within each region, write the number of elements just in that region.



b. (*2 pts*) How many students used at least two of the locations to buy books?

$$10 + 10 + 4 + 5 = 29$$