# MA 137 Exam One Review Problems—ANSWERS

1.

a. True
b. True
c. False, in fact, $R \cap S = R$
d. True

2.

Is *A* a subset of *B*? No. For example, 0 is not an element of *B*.
Is *B* a subset of *A*? No. For example, 15 is not an element of *A*.
$A \cup B = \{0, 5, 10, 15, 20\}$
$A \cap B = \{5, 10, 20\}$

3. $P \cap B'$ is the set of Purdue students that are not Indiana residents.

4.

| Number of unit squares | Long-flats | Flats | Longs | Units |
|---|---|---|---|---|
| 48 | **0** | **1** | **4** | **3** |
| 268 | **2** | **0** | **3** | **3** |
| **215** | 1 | 3 | 3 | 0 |

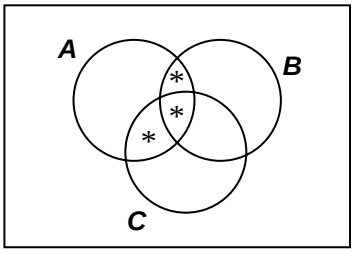
5. I've omitted the sketches, but I'm giving the number of total units for each.
   a. $342_{\text{five}}$ = 97 total units
   b. $1122_{\text{three}}$ = 44 total units
   c. $602_{\text{eight}}$ = 386 total units

6. I've omitted the sketches, but I'm giving the numeral in correct base notation.
   a. $2030_{\text{six}}$ b. $316_{\text{twelve}}$ c. $1212_{\text{seven}}$

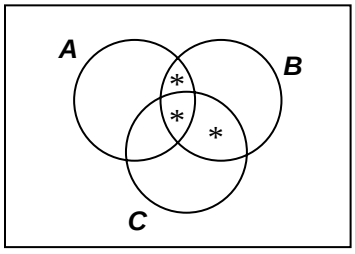
7. To report 19 items as "103," Robin must be in base four. Then "103" would be one flat (with 16 total units) and three units.

8. The regions that should be shaded are those containing an *:

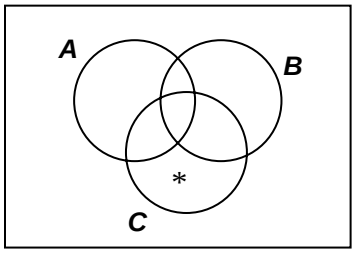
a. $A \cap (B \cup C)$



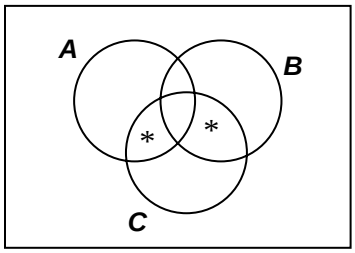
b. $(A \cup C) \cap B$




c. $B' \cap (A' \cap C)$

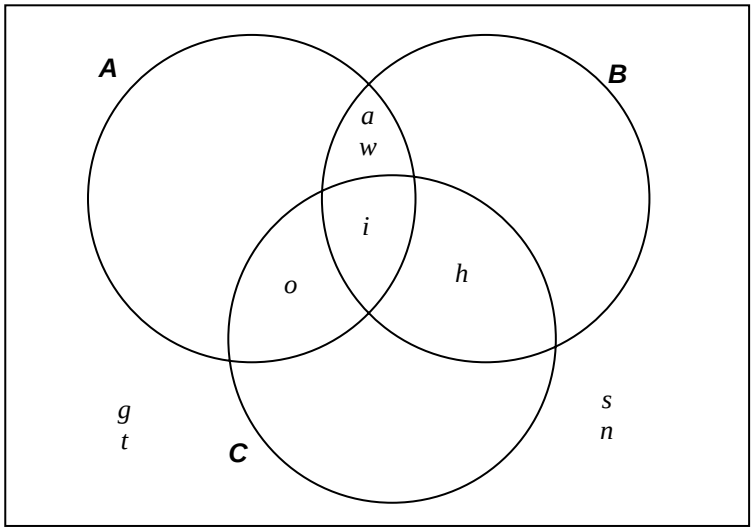



d. (This one is harder than anything I'd put on an exam)
$((A \cap C) \cap B') \cup ((B \cap C) \cap A')$




9. 13

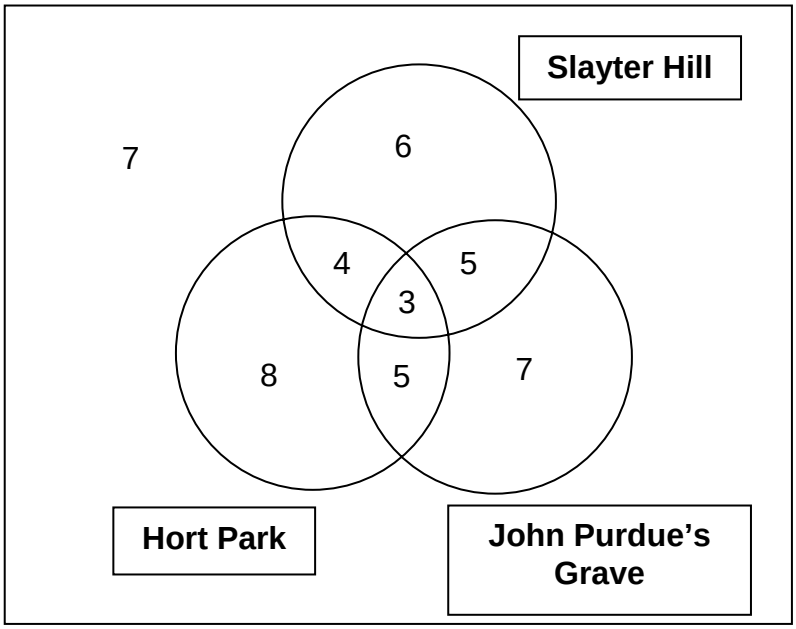
10.



11. See the back of the textbook

12. See the back of the textbook

13.




a. 5
b. 7
c. 12