Name _____ **KEY** _____

Instructions: Show all work. Use exact answers, unless specifically asked to round.

1. If $A = \{1, 2, 4, 9, 11\}$ and $B = \{0, 3, 4, 5, 7, 8, 9\}$,
    a. Is $5 \in A$ true or false? *false*

    b. Find $A \cap B$ $\{4, 9\}$

    c. Find $A \cup B$ $\{0, 1, 2, 3, 4, 5, 7, 8, 9, 11\}$

    d. If U (the universal set) is all whole numbers less than 12, what is A' or A^c?

    $\{0, 3, 5, 6, 7, 8, 10\}$

2. Use the two-way table below to answer the questions that follow.

    Tabulated statistics: Smoke Cigarettes, Gender

    Rows: Smoke Cigarettes   Columns: Gender

	Female	Male	All
No	120	89	209
Yes	7	10	17
All	127	99	226

    Cell Contents: Count

    a. What is the probability of a randomly selected person from this sample being a smoker?

    $\dfrac{17}{226}$

    b. What is the probability of a randomly selected person from this sample being a woman?

    $\dfrac{127}{226}$

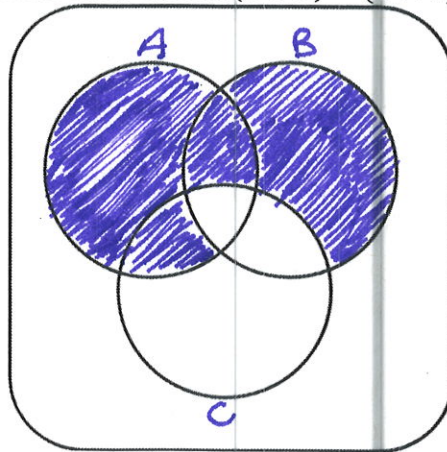   c. What is the probability of a randomly selected person from this sample being a woman who smokes?

    $\dfrac{7}{226}$

    d. Are gender and smoking independent? Show a calculation to justify your conclusion.

    $\dfrac{17}{226} \cdot \dfrac{127}{226} \neq \dfrac{7}{226}$ *dependent*

3. Shade the Venn diagram shown to show the set $(A \cup B) - (B \cap C)$. Label your sets A, B, and C.

4. Draw a tree diagram to show the possible outcomes for three friends standing in line, in order.
[Hint: How many ways can the first person stand in line? What about the second? Etc.]

Friends A, B, C