Problems Of The Week
Due January 29nd

Make sure to review the guidelines before you start!
Solutions to the first set can be found at:
http://www.math.ucsb.edu/~lzirbel/problems.html

1. A soft-drink company wanted to see which of two new drinks its consumers would prefer. To find out, the company surveyed 400 people who had tried both new drinks. 254 of the people surveyed liked drink A, 136 liked both drinks A and B, and 42 people liked neither. Which of the two drinks was preferred by the larger number of people? Show how you found the answer.

2. A van holds exactly 8 people, but only 3 of those 8 people can drive the car. What is the number of ways that the 8 people can be seated in the car on a drive?

3. Use the Venn diagram below to answer each of the following.
   (a) How many elements are contained in $A \cap B \cap C$?
   (b) How many elements are contained in $A \cup B \cup C$?
   (c) How many elements are contained in $A \cap B$?
   (d) How many elements are contained in $A \cup C$?
   (e) How many elements are contained in $(A \cup B) \cap C$?
   (f) How many elements are contained in $\sim A$?
4. If \( n(A) \) = the number of elements in set A, \( n(B) \) = the number of elements in set B and 
\( n(A \cap B) = \) the number of elements in the intersection of sets A and B then write a formula for 
\( n(A \cup B) \) based on \( n(A) \), \( n(B) \), and \( n(A \cap B) \).

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n( A \cup B) = 
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5. A clothing store has a rack with 30 items on it. 16 of the items are sweaters and 15 of the items 
are blue. If 3 of the items are neither sweaters nor blue, then how many blue sweaters are on the 
rack?