NAME _____

1) Continue the pattern for five more items in the list:
aaa, aab, aba, ...

For Questions 2 and 3, decide whether the statement is true or false. If it is true, give two examples to illustrate it. If it is false, give a single counterexample:

2) If the price of an air conditioner is raised by 17% and then lowered by 17%, the price will be the same as the original price.

3) If Janice got a higher grade than Rachel, and Tanna got a lower grade than Rachel, then Tanna got a lower grade than Janice.

4) Decide whether the two sequences of operations give the same result:

Subtracting y from x and adding the difference to z

Adding x to z and then subtracting y

5) Explain the difference between the symbols $\subseteq$ *and* $\subset$.

6) Find n(A) for the set: A = { {ø}, {0}, {ø, 0} }

7) Decide whether the sets are equal:

{b is a positive integer} {k is a counting number}

8) List all of the three-element subsets of the set {a, b, c, d}.

9) Let U = {all sodas}; A = {all diet sodas}; B = {all cola sodas}; C = {all sodas in cans}; and D = {all caffeine-free sodas}. Describe A ∩ B ∩ D in words.

10) Create a Venn diagram to represent the set A' U B' .

11) If U = {q,r,s,t,u,v,w,x,y,z}
A = {q,s,u,w,y}
B = {q,s,y,z}
C = {v,w,x,y,z},

list the elements in A U (B ∩ C).

12) Using the same sets as Question 11, list the elements in C – A' .

13) If A = {1,2,3,4,5,6,7} and C = {1,2,3,...}, what is n(A – C)?:

14) A survey of 240 families showed that:

91 had a dog;
70 had a cat;
31 had a dog and a cat;
91 had neither a cat nor a dog nor a parakeet;
7 had a cat, a dog and a parakeet.

How many families had a parakeet only?

15) If a set consists of 6 elements, how many subsets does it have?

2^6

BONUS:
A school has a Spanish club, a French club and a drama club, each of which has 25 members. The Spanish and drama club have 6 members in common. The drama and French club have 4 members in common. The Spanish and French club have no members in common. Draw a picture to illustrate the situation.