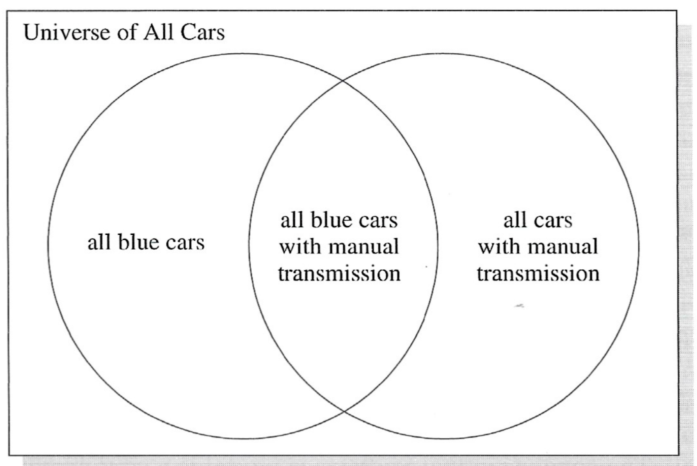
where the three dots, ..., called **ellipses**, indicate that the terms continue on indefinitely.

The Greek symbol epsilon, $\in$, indicates an element is a member of a set. For example, $1 \in A$, means that the number 1 is an element of the set A, previously defined. If an element is not a member of a set, the symbol $\notin$ is used, as in $2 \notin A$.

If two arbitrary sets, such as X and Y, are defined such that every element in X is an element of Y, then X is a **subset** of Y and is written in the mathematical form $X \subset Y$ or $Y \supset X$. From the definition of a subset it follows that every set is a subset of itself. A subset that is not the set itself is called a **proper subset**. For example, the set X defined previously is a proper subset of Y. In discussing sets it is useful to consider the sets under discussions as subsets of a **universal set**. The universal set (universe) changes as the topic of discussion change. Figure 2.14 illustrates a subset formed as the **intersection** of two sets in the universe of all cars. In discussing numbers the universe is all numbers. The universe is drawn as a rectangle surrounding its subsets. Universal sets are not used just for convenience. The indiscriminate use of conditions to define sets can result in logical paradoxes.

Figure 2.14 Intersecting Sets



If we let A be the set of all blue cars, B the set of all cars with manual transmissions, and C the set of all blue cars with manual transmissions, we can write:

$$C = A \cap B$$

where the symbol $\cap$ represents the intersection of sets. Another way of writing this is in terms of elements x as follows:

$$C = \{x \in U \mid (x \in A) \wedge (x \in B)\}$$