You MUST use good notation and show appropriate work.

Math 102

(Section 1.3; 1.4)

Name _____

1 .3 Language of Sets

1. Explain the difference between Ø and {Ø} in your own words.

2. Express each of the following as a set *both* in set-builder notation **and** in roster notation:

   (a) the set of multiples of five between 2 and 38.

   (b) the set of integers which when squared equal 9.

   (c) the set of integers which when squared equal 7.

3. Express each as a set using set builder notation.

   (a) {1, 4, 9, 16, 25, 36, 49}

   (b) {3, 6, 12, 15, . . . }

4. Determine the cardinal number, $n(A)$, for each of the following sets:

   (a) A = {*x: x* is a letter in our alphabet} _____

   (b) A = {1, 0, ∅, {∅}} _____

   (c) A = {*x: x* is a letter in the word "Mississippi"} _____

1.4 Comparing Sets

5. Assume ***A*** and ***B*** are two nonempty sets. Explain the meaning of each of the following in your own words.
   (a) ***A*** equals ***B***.

   (b) ***A*** is equivalent to ***B.***

6. Assume ***A*** is a set such that $n(A) = 6$.
   (a) Determine the number of distinct subsets of ***A***. _____

   (b) Determine the number of distinct proper subsets of ***A***. _____

   (c) Using Pascal's Triangle (without proof - see page 41), how many different subsets of size 3 can be formed using elements from ***A***? _____

7. Classify each by writing ***"true"*** or ***"false"*** in the blank provided.
   (a) {a, b, c} = {b, c, a} _____

   (b) $n(\{a, b.c\}) = n(\{1, 2, 3\})$ _____

   (c) $\{b\} \in \{a, b\}$ _____

   (d) $\{0,1\} \subset \{0, \{0,1\}, 2\}$ (be careful) _____

   (e) $\{\{0,1\}\} \subseteq \{0, \{0,1\}, 2\}$ _____

   (f) {2, 4, 6} and {4, 6, 8} are equivalent sets. _____

   (g) $\{\varnothing\}$ and {0} are equivalent sets. _____