Definitions:  Given $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$

$A = \{2, 3\} \quad B = \{5, 9, 10\} \quad C = \{1, 2, 3, 4\} \quad D = \{2, 4, 5, 7, 9\}$

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Definition</th>
<th>Example</th>
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<td>$\subsetneq$</td>
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Practice:
Using the sets described above identify the following as True or False:

1. $3 \in A$  
2. $\{3\} \in A$
3. $A \subset B$  
4. $A \subset C$
5. $C \subset A$  
6. $A \subset U$
7. $A \subseteq A$  
8. $A \subset A$
9. $\emptyset \in A$  
10. $\emptyset \subseteq A$
11. $\emptyset \subset A$  
12. $\emptyset \subset \emptyset$
13. $\emptyset \subseteq \emptyset$  
14. $\emptyset \subset U$

SUBSETS: List ALL the subsets of each set below. Begin with the subsets containing zero elements, then the subsets containing one element, then two elements, etc until you list the set itself. Then count the number of subsets your identified and look for a pattern.

Set A: List the subsets:

Number of elements in set A = _____
Number of subsets for set A = _____

Set B: List the subsets:

Number of elements in set B = _____
Number of subsets for set B = _____
Set C: List the subsets:

Number of elements in set C = _____
Number of subsets for set C = ______

Set D: How many elements? _____ Predict the number of subsets. ______

If set E had 7 elements, how many subsets would there be for set E? _______

**Formula**: For a set with n elements there are ______ subsets and _____ proper subsets.

**Application**:  
You can order a new car with any of the following options: 
O = {CD player, 4-wheel drive, keyless entry, emergency road service}  
How many different orders could be made – selecting from zero to four options?

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**HW**: Read section 2.2 and work the following problems  
1-5 all, 7-26 all, 28-30 all, 33-36 all, 51-54 all