Practice, Lab 1

We'll assume the following sets:
A = {Boston, {Amherst}, 3, 7, {Norah}, Stella}
B = {x | x is a city in Massachusetts}
C = {x | x is a natural number}
D = {Nina, Josie, Bea}

Part One:

(1) Are the following statements true or false?

a. Amherst ∈ A
b. {Amherst} ∈ A
c. {Amherst, Boston} ⊆ A
d. { {Amherst}, Boston} ⊆ A

(2) Assume the following sets:

S_1 = {{Ø}, {A}, A}
S_2 = {A}
S_3 = {{A}, A}
S_4 = Ø
S_5 = {Ø}
S_6 = {{Ø}}

Of the sets S_1 to S_6, which are members of S_1? Which are subsets of S_1?

(3) Using your world knowledge, specify the following sets by listing their members.

a. {x | x ∈ A and x ⊆ B}
b. {x | x ∈ A and x ∈ B}

Part Two:

(4) Write down the following sets.

a. A ∩ B
b. A – B
c. B ∩ C
d. A – C
e. D ∩ Ø
f. A – D
g. A ∩ C
h. (A ∪ D) ∩ C
i. D ∪ Ø
j. A ∪ (D ∩ C)

(5) Assume that U = {NYC, Philly, LA, Boston, Seattle, Amherst}. Given this, what is B'?

Linguistic Puzzles

(6) a. Write down, in predicate notation, the set of things that are tall.
b. Using your answer to (6a), how could we represent the sentence *John is tall* using set notation? (Assume that John ∈ U).
c. How could we represent the sentence *John is tall and handsome* using set notation?
d. How could we represent the sentence *John is tall or handsome* using set notation?

Key Terms, Lab 1

1.) **Set**

   a. **Empty set**

   b. **Variable (from predicate notation)**

   c. **Predicate (from predicate notation)**

2.) **Set membership (∈)**

3.) **Subset (⊆)**

4.) **Set Union (∪)**

5.) **Set Intersection (∩)**

6.) **Set Difference (–)**

7.) **Set Complement (S')**

8.) **Cardinality (|S|)**

9.) **Power Set (℘ (S))**