

1. Fill in the table. Try to do so from memory.

Symbol	Definition
$x \in A$	
$\emptyset$	
$A \subseteq B$	
$A \subset B$	
$P(A)$	
$A = B$	

2. Give the following sets in set builder notation:  $Z, Q, C$

3. Give a common strategy for proving

- $A \subseteq B$  directly
- $A \subseteq B$  by contradiction
- $A = B$  using subsets
- $A = B$  using  $\Leftrightarrow$
- $A \cap B = \emptyset$  using contradiction
- iff

4. #1ab, #3adh, #4abgkl, #6e, #8a, #9ghij, #11 (pg 76-77)

5. How many proper subsets does a set with 5 elements have?

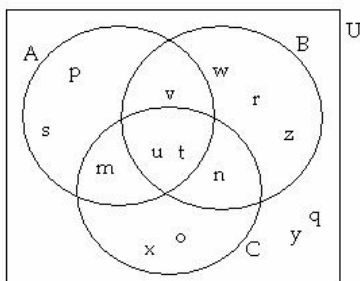
6. A ham sandwich can be ordered with some, none, or all of the following items: {cheese, pickles, olives, lettuce, tomatoes}. How many different variations are available for ordering a ham sandwich?

7. Fill in the table.

Symbol	Definition
$A \cup B$	
$A \cap B$	
$A - B$	
$B'$	

8. #1abcj, #3aehkm, #10abg (pg 83-84)

9. Use the Venn diagram to list  $(A \cap B) \cup C$  in roster form.



10. Prove Theorem 2.6bmp (pg 80)

11. Prove Theorem 2.7ae (pg 82)

12. Complete the following.

a.  $x \in \bigcup_{A \in \mathcal{A}} A \Leftrightarrow$  \_\_\_\_\_

b.  $x \in \bigcap_{A \in \mathcal{A}} A \Leftrightarrow$  \_\_\_\_\_

13. Write a long chain of nested sets using sets from real life.

14. #1ckm, #2ckm, #6a, #10b (pg 92-92)

15. Prove Theorem 2.8c (pg 88)

16. Prove Theorem 2.9c (pg 90)

17. Give a common strategy for proofs by
  - i. induction
  - ii. strong induction
  - iii. Well-Ordering Principle
18. In practical terms, how are PMI and Generalized PMI different?
19. #8c, #9b (pg 106-107)
20. #3b, #12 (pg 116-117)
21. #2ace, #14ab, #4b, #6b, #17bc (pg 127-128)
22. Give the Well-Ordering Principle from memory.
23. From memory, do 7 rows of Pascal's triangle.
24. Define cardinality.

Good luck!