

Math 8: Homework 1

Read Chapter 1.

Exercises: Hand in all of the following in lecture on Thursday, April 7th.

Chapter 1: #2, #4, #6, #8, #9, #10

I. You see the following four cards, lying on a table:



Consider the statement P: “If a card has a B on one side, then it has the number 2 on the other.”

Assume you know that each card has a letter on one side and a number on the other. Which cards do you *not* need to turn over to decide whether P is true or false? Explain your answer!

II. Decide whether the following statements are true or false.

(a) $\{5\} \subseteq \{2, \{5\}\}$

(d) $\emptyset \in \{1, 2\}$

(b) $\{5\} \subseteq \{5, \{2\}\}$

(e) $\{3, \emptyset\} \subseteq \{3\}$

(c) $\{1, 2\} \subseteq \{1, 2\}$

(f) $\emptyset \in \emptyset$

For the false ones, rewrite the statement to make it true – do this by changing only the symbol between the sets; don’t change anything about the two sets!

III. (a) Give an example of sets A , B , C such that all three of the following statements are true: $A \in B$, $B \in C$, and $A \notin C$.

(b) Give an example of sets A , B , C such that all three of the following statements are true: $A \in B$, $B \in C$, and $A \in C$.