For each yes/no question, circle yes or no.

1. Suppose $A = \{2, 4\}$ and $B = \{2, 5, 6\}$.
   
   (a) Enumerate the members of $A \cup B$ (in braces).

   (b) Enumerate the members of $A \cap B$ (in braces).

   (c) Is $2 \in A$? yes no

   (d) Is $\{2\} \in A$? yes no

   (e) Is $\{2, 4\} \subseteq A$? yes no

   (f) Is $A \subseteq B$? yes no

   (g) Is $\{\} \subseteq B$? yes no

   (h) Is $\{\} \in B$? yes no

2. What set is $\{x \in \{2, 3, 4, 5, 6\} \mid x \text{ is a prime number}\}$? List the members of the answer set, in braces.

3. Is $A \times B \subseteq A \times B \times C$ for all sets $A$, $B$ and $C$? yes no
   
   (Hint. Try it for $A = \{1\}$, $B = \{2\}$ and $C = \{3\}$.)

4. How many members does the powerset of $\{\}$ have?

5. Suppose $A = \{2\}$ and $B = \{3, 4\}$.
   
   (a) What is $A \times B$? (List the members, in braces.)
(b) What is the powerset of $A \times B$? (List the members, in braces.)

6. What is $|\{10, \{10\}\}|$?

7. Use a membership table to prove: $(A \cap B) \cap C = A \cap (B \cap C)$ for all sets $A$, $B$ and $C$. 