
Section 1.2: Subsets

Exercises

Let $A = \{1, 3, 5, 7, 9\}$, $B = \{5, 6, 7, 8\}$, $C = \{3, 6, 9, 12\}$, $D = \{0, 1, 2, 3, \dots, 15\}$. State whether the following are true or false.

1. $A \subset B$
2. $D \subseteq \mathbb{N}$
3. $A \subset \mathbb{Z}$
4. $\{3, 6\} \subset C$
5. $B \subseteq B$
6. $7 \notin C$
7. $7 \in D$
8. $\emptyset \subset \emptyset$

Let $A = \{2, 4, 6, 8\}$, $B = \{y \mid y \text{ is an even natural number}\}$, and $C = \{2, 4, 6, 8, \dots\}$. State whether the following are true or false.

9. $2 \subseteq B$
10. $\{2\} \subset A$
11. $A \subset B$
12. $B \subseteq \mathbb{N}$
13. $\emptyset \subseteq \mathbb{N}$
14. $C \subset \mathbb{Z}$
15. $C \subset B$
16. $C \subseteq B$

For all sets A , B , and C , state whether the following are true or false.

17. If $A \subseteq B$ and $B \subseteq C$, it is also true that $A \subseteq C$.
18. If $A \subseteq B$ then $A \subset B$.
19. If $A \subseteq B$ and $B \subset C$ then $A \subset C$.
20. List all of the subsets of the set $\{1, 2, 3\}$.
21. List all of the proper subsets of the set $\{1, 2, 3\}$.
22. (challenge) If the set X has n members, how many proper subsets does X have?
How many subsets?