[07-04-15-T-8] Questions on Sets

List the elements of each set

1. The set of positive integers between *3* and *7*.
2. The set of letters in the word "mississippi".
3. The set of major league baseball players who have batting averages of over *.900*.
4. The set of days of the week having names that begin with the letter "*S*".
5. The set of even numbers between *2* and *1000*.
6. The set of odd numbers.

Say whether the statement is true or false.

7. $6 \in \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$

8. $\{5\} \in \{5, 10, 15, 20, \ldots\}$

9. $10 \in \{2, 5, 8, 11, 13, 15, 20\}$

10. $22 \in \{x : x$ is an even number and less than $18\}$

11. $\{1, 2, 3, 4, 5\} = \{0, 1, 2, 3, 4, 5\}$

12. $\{1\} \in \{1, \{1\}, 2, \{2\}, 3\}$

Let $\mathcal{A} = \{2, 4, 6, 8, 10, 12\}$
$\mathcal{B} = \{1, 3, 5, 7, 9, 11\}$
$\mathcal{C} = \{4, 6\}$
$\mathcal{D} = \{3, 5\}$
$\mathcal{E} = \{4, 5\}$
$\mathcal{F} = \{x : x$ is an odd number$\}$
$\mathcal{G} = \{x : x$ is an even number$\}$

Say whether the statement is true or false.

13. $\mathcal{A} \cap \mathcal{B} = \varnothing$

14. $\mathcal{C} \cap \mathcal{D} = \mathcal{E}$

15. $\mathcal{F} \cup \mathcal{G} = \mathcal{Z}^+$

16. $\mathcal{A} \cup \mathcal{C} = \mathcal{A}$

17. $\mathcal{A} \cap \mathcal{C} = \mathcal{C}$

18. $\mathcal{A} \subseteq \mathcal{A}$

19. $3 \subseteq \mathcal{B}$

20. $\mathcal{A} \subseteq \mathcal{F}$

21. $n\mathcal{A} = 4$

22. $n\varnothing=1$

23. $\varnothing \subseteq \mathcal{D}$

24. $\varnothing \cap \mathcal{A} = \varnothing$

Write the following sets using set builder notation

25. $\{2, 4, 6, 8, \ldots, 1000\}$

26. $\{1, 3, 5, \ldots\}$

Questions 27, 28, 29, and 29, please ***explain*** *why your answers are correct.*

27. Suppose $\mathcal{A}$ and $\mathcal{B}$ are equivalent sets. Is $\mathcal{A} = \mathcal{B}$?

28. Suppose $\mathcal{A}$ and $\mathcal{B}$ are equal sets. Are $\mathcal{A}$ and $\mathcal{B}$ equivalent sets?

29. Does the set of even integers have the same number of elements as the set of integers?

30. Is it true that: if $x \in \mathcal{A}$ and $\mathcal{A} \subseteq \mathcal{B}$, then $x \in \mathcal{B}$?