

Set notation



Translate between set notation, Venn diagram regions, and roster notation.

Name _____

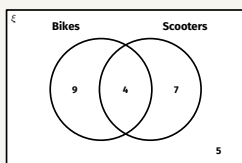
Date _____

Reading set notation

$x \in A$ means x is an element of A ; $x \notin A$ means it is not. $A \cap B$ is the overlap of two sets; $A \cup B$ is everything in either set; A' is the complement (everything not in A). $\emptyset$ is the empty set, and $A \subset B$ means every element of A is also in B .

Worked example

State $n(\text{Bikes})$, and write the notation for “not Scooters”.



$$n(\text{Bikes}) = 9 + 4 = 13.$$

$$\text{“Not Scooters” is Scooters}'; n(\text{Scooters}') = 9 + 5 = 14.$$

1. $\xi = \{1, \dots, 15\}$. $A = \{5, 10, 15\}$.
Is $10 \in A$? Is $12 \in A$?

2. Write $C = \{\text{odd numbers from 1 to 9}\}$ using roster notation.

3. What does $\emptyset$ mean? Give one example of an empty set.

4. State $n(\text{Library})$ and $n(\text{Sport})$.



5. State $n(\text{Library} \cap \text{Sport})$ and $n(\text{Library} \cup \text{Sport})$.



6. State $n(\text{Sport}')$.



7. Write the set notation expression for the shaded region.



8. Write the set notation expression for the shaded region.



9. Write the set notation expression for the shaded region (exactly one set).



Set notation (continued)

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10. Write the set notation expression for the shaded region.



11. Describe in words what $A \cap B'$ means.

12. Describe in words what $(A \cup B)'$ means.

13. State $n(\text{Cake} \cap \text{Icecream})'$ (everyone NOT eating both).



14. State $n(\text{Cake} \cup \text{Icecream})$.



15. ξ has 25 elements. $n(A) = 14$. Find $n(A')$.

16. $A = \{3, 6, 9\}$, $B = \{1, 2, \dots, 10\}$. Is $A \subset B$? Explain.

17. State $n(A \cap B \cap C)$ and $n(\text{exactly two of the three})$.



18. ξ has 50 elements. $n(A) = 27$, $n(B) = 20$, $n(A \cap B) = 9$. Find $n((A \cup B)')$.
