

\in	"is an element of" / "is a member of"
\notin	"is not an element of" / "is not a member of"
$\{ \}$ or \emptyset .	empty set/null set
ξ	Universal set
\subset	"is a subset of"
$\not\subset$	"is not a subset of"
A'	"A complement"
\cup	Union
\cap	intersection

A **set** is a collection of items, usually of the same kind. Each item in a set is called an **element** or **member**. In a **finite set** it is possible to count and name all the elements in the set. In an **infinite set** it is impossible to count or name all the elements in the set. Two sets are **equal** if they both have the same elements. Two sets are **equivalent** if they both have the same *number* of elements. **Disjoint sets** have no intersection.

1. $A = \{2, 3, 4, 6\}$ and $B = \{3, 7\}$. Find:

- a) $n(A) = \underline{\hspace{2cm}}$ b) $n(B) = \underline{\hspace{2cm}}$ c) $A \cup B = \underline{\hspace{2cm}}$ d) $A \cap B = \underline{\hspace{2cm}}$
 e) $A' = \underline{\hspace{2cm}}$ f) $B' = \underline{\hspace{2cm}}$ g) $n(A \cap B) = \underline{\hspace{2cm}}$ h) $n(A \cup B) = \underline{\hspace{2cm}}$

2. $C = \{1, 5, 10, 15\}$ and $D = \{5, 6\}$

a)	C'	
b)	$C \cup D$	
c)	$C \cap D$	
d)	$n(C)$	
e)	$n(D)$	
f)	$n(C \cup D)$	
g)	$n(C \cap D)$	

3. $Q = \{2, 3, 5, 7\}$ and $R = \{1, 3, 5\}$

a)	Q'	
b)	$Q \cup R$	
c)	$Q \cap R$	
d)	$n(Q)$	
e)	$n(R)$	
f)	$n(Q \cup R)$	
g)	$n(Q \cap R)$	

4. Circle True or False

$\xi = \{a, b, c, d, e, f, g\}$

$X = \{a, b, c, d, f\}$ and $Y = \{b, f, g\}$

- a) True False $X \cap Y = \{b, f\}$
 b) True False $f \in Y$
 c) True False $X \subset Y$
 d) True False $n(X \cap Y) = 2$
 e) True False $b \notin X$
 f) True False $X \cup Y = \{b, f\}$
 g) True False $X' = \{e, g\}$

5. Circle True or False

$\xi = \{1, 2, 3, 4, 6, 8, 9\}$

$R = \{2, 4, 6, 8\}$ and $S = \{1, 3, 4, 6, 9\}$

- a) True False $n(R) = 5$
 b) True False $R \cap S = \{4, 6\}$
 c) True False $S' = \{2, 4\}$
 d) True False $3 \notin S$
 e) True False $2 \in R$
 f) True False $R \subset \xi$
 g) True False $n(R \cup S) = 9$

6. Circle True or False

$\xi = \{\text{The first 6 square numbers}\}$

$M = \{1, 4, 9\}$ and $N = \{1, 2, 4, 9, 16\}$

- a) True False $2 \notin N$
 b) True False $M' = \{2, 16\}$
 c) True False $M \cap N = \{1, 4, 9\}$
 d) True False $n(M \cup N) = 5$
 e) True False $M \cup N = \{1, 2, 4, 9\}$
 f) True False $9 \in M$
 g) True False $M \subset N$

7. $\xi = \{1, 2, 3, 4, 5, 6, 9, 12\}$, $J = \{1, 2, 3, 6, 12\}$, $K = \{1, 3, 9\}$, $L = \{\text{factors of 4}\}$

- a) $J \cap K = \{ \}$ b) $J \cap L = \{ \}$ c) $J \cup K = \{ \}$
 d) $J \cup L = \{ \}$ e) $J' = \{ \}$ f) $L' = \{ \}$
 g) $n(J \cup L) =$ h) $n(K') =$ i) $n(L \cap J) =$
 j) $n(J) =$ k) $K' = \{ \}$ l) $n(L) =$