

## ESERCIZI DI VERIFICA SUGLI INSIEMI - Soluzioni

1. Siano  $A, B$  insiemi. Completare le seguenti identità.

- (a)  $A \cup A = A$
- (b)  $A \cap A = A$
- (c)  $A \setminus A = \emptyset$
- (d)  $A \cup \emptyset = A$
- (e)  $A \cap \emptyset = \emptyset$
- (f)  $A \setminus \emptyset = A$
- (g)  $\emptyset \setminus A = \emptyset$
- (h)  $(A \cup B) \cap B = B$
- (i)  $(A \cap B) \cup B = B$
- (j)  $A \cap (B \setminus A) = \emptyset$
- (k)  $A \cap (A \cap B) = A \cap B$
- (l)  $A \cup (A \cap B) = A$
- (m)  $A \cap (A \setminus B) = A \setminus B$
- (n)  $A \cup (A \setminus B) = A$

2. Siano  $A, B, C$  insiemi. Dire quali delle seguenti proprietà sono vere **in generale**.

- |   |       |
|---|-------|
| (a) $A \cup B = B \cup A$                                       | Vero  |
| (b) $A \cap B = B \cap A$                                       | Vero  |
| (c) $A \setminus B = B \setminus A$                             | Falso |
| (d) $A \setminus B = A \setminus (A \cap B)$                    | Vero  |
| (e) $A \cup (B \setminus A) = A \cup B$                         | Vero  |
| (f) $(A \cup B) \cup C = A \cup (B \cup C)$                     | Vero  |
| (g) $(A \cap B) \cap C = A \cap (B \cap C)$                     | Vero  |
| (h) $(A \setminus B) \setminus C = A \setminus (B \setminus C)$ | Falso |

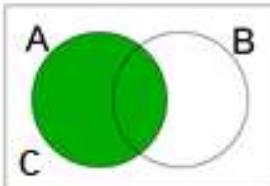
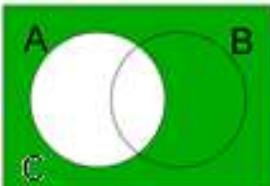
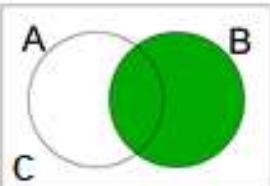
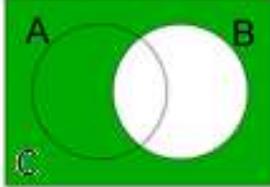
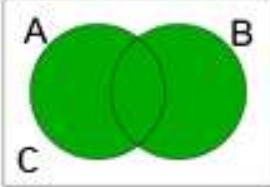
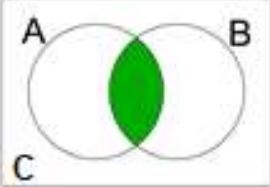
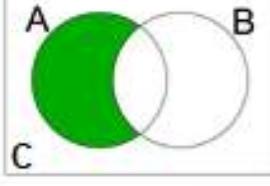
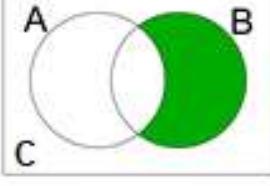
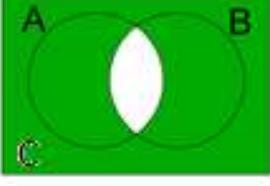
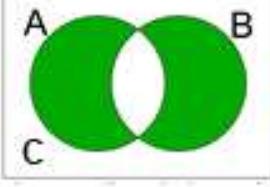
3. Effettuare sugli insiemi assegnati le operazioni indicate, determinando l'insieme risultante.

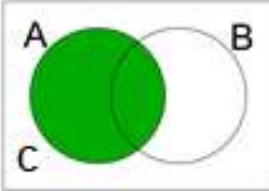
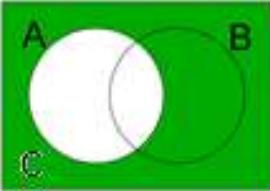
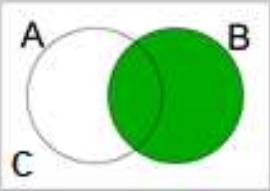
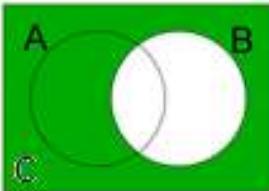
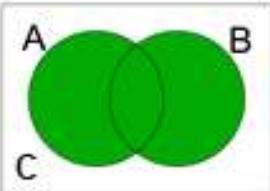
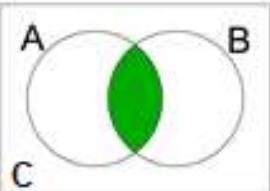
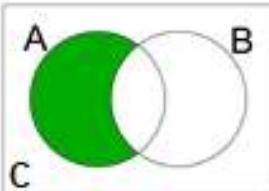
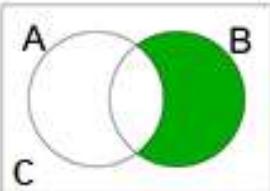
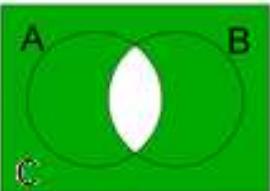
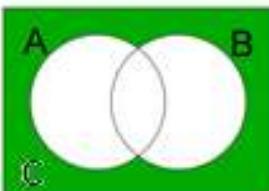
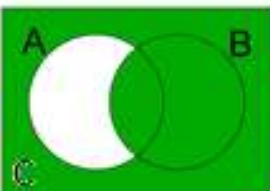
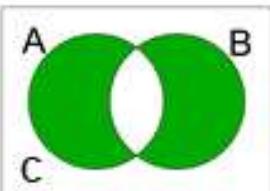
- (a)  $S =$  insieme dei numeri interi divisibili per 2  
 $T =$  insieme dei numeri interi divisibili per 3  
 $S \cap T =$  insieme dei numeri interi divisibili per 6
- (b)  $U =$  insieme dei numeri interi maggiori di 3  
 $V =$  insieme dei numeri interi maggiori di 5  
 $U \setminus V = \{4, 5\}$
- (c)  $W =$  insieme dei quadrati perfetti pari  
 $Z =$  insieme dei numeri interi divisibili per 4  
 $W \cup Z = Z$

4. Sotto ogni diagramma di Venn indicare l'operazione, effettuata sugli insiemi  $A$ ,  $B$ ,  $C$ , che abbia come risultato l'insieme colorato in verde.

L'insieme  $C$  è rappresentato dal rettangolo.

**Sono possibili più soluzioni.**

		
$A$	$C \setminus A$	$B$
		
$C \setminus B$	$A \cup B$	$A \cap B$
		
$A \setminus B$	$B \setminus A$	$C \setminus (A \cap B)$
		
$C \setminus (A \cup B)$	$C \setminus (A \setminus B)$	$C \setminus (B \setminus A)$
		Alcune soluzioni alternative sono proposte alla pagina seguente.
$C \setminus ((A \setminus B) \cup (B \setminus A))$	$(A \setminus B) \cup (B \setminus A)$	

		
		
 $A \cap (C \setminus B)$	 $B \cap (C \setminus A)$	 $(C \setminus A) \cup (C \setminus B)$
 $(C \setminus A) \cap (C \setminus B)$	 $(C \setminus A) \cup (A \cap B)$	 $(C \setminus B) \cup (A \cap B)$
 $C \setminus ((A \cup B) \setminus (A \cap B))$	 $(A \cup B) \setminus (A \cap B)$	