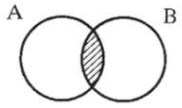
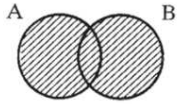
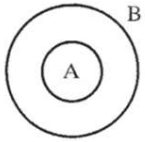
1. ∩ 'intersection'
   A ∩ B is shaded.



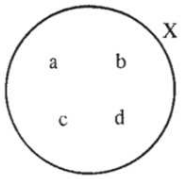
2. ∪ 'union'
   A ∪ B is shaded.



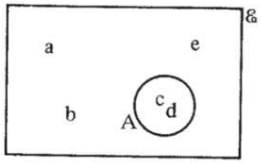
3. ⊂ 'is a subset of'
   A ⊂ B
   [B ⊄ A means 'B is *not* a subset of A']



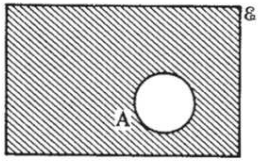
4. ∈ 'is a member of'
   'belongs to'
   b ∈ X
   [e ∉ X means 'e is not a member of set X']



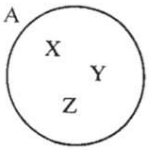
5. $\mathscr{E}$ 'universal set'
   $\mathscr{E} = \{a, b, c, d, e\}$



6. A′ 'complement of'
   'not in A'
   A′ is shaded
   $(A \cup A' = \mathscr{E})$



7. $n(A)$ 'the number of elements in set A'
   $n(A) = 3$

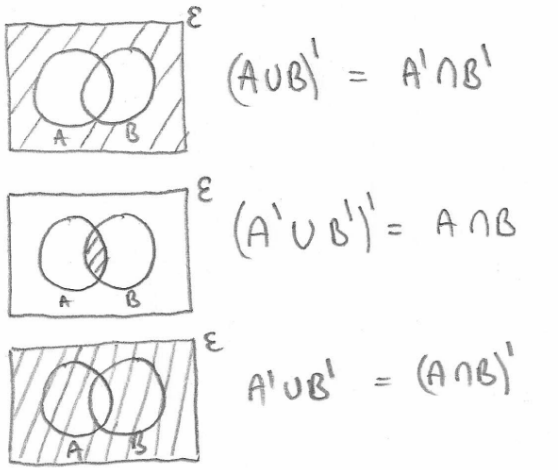


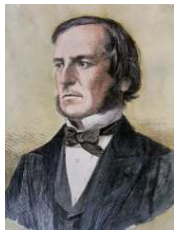
8. $A = \{x : x \text{ is an integer}, 2 \leqslant x \leqslant 9\}$

   The set of elements x such that x is an integer and $2 \leqslant x \leqslant 9$.
   The set A is {2, 3, 4, 5, 6, 7, 8, 9}.

9. ∅ or { } 'empty set'
   (Note ∅ ⊂ A for any set A)

Rules and notation of mathematical logic



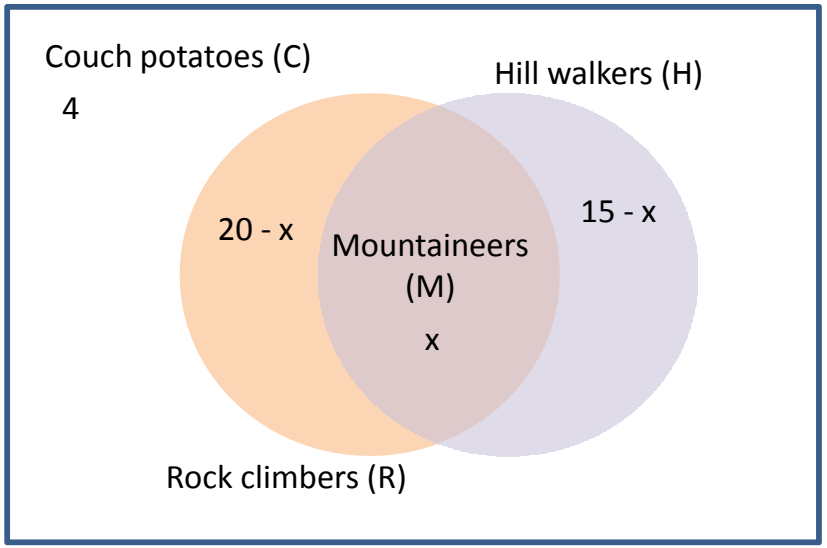


[George Boole](#)
1815-1864

Boolean algebra

$$A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$$
$$A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$$
$$A \cap (A \cup B) = A$$
$$A \cup (A \cap B) = A$$
$$A' \cap B' = (A \cup B)'$$
$$A' \cup B' = (A \cap B)'$$

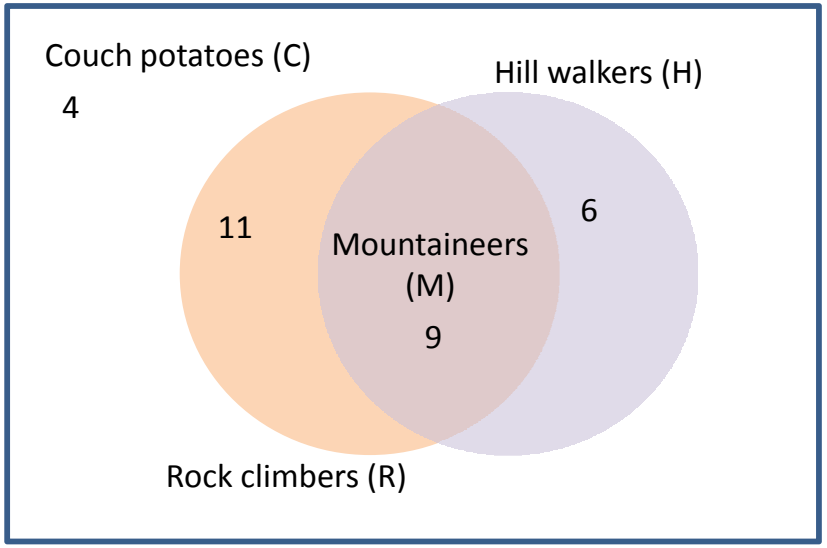
Last two are the *De-Morgan laws*



30 attendees at the local BMC meeting. 20 rock climbers and 15 hill walker + 4 couch potatoes. How many mountaineers?

4 + 20 – x + x + 15 – x = 30

Hence 39 – x = 30 => **x = 9 mountaineers**



n(M) = 9; n(R) = 20; n(R U H) = 26; n(ε) = 30