EngineeringRise

Sets, power set and algebra of sets

Formulas and units, JEE Main. Status: Reviewed on 2026-11-20.

Result	Formula	Units or note
Subsets of an n-set	n(P(A)) = 2^n Valid when: A finite with n elements	dimensionless count
Proper / non-empty proper subsets	2^n - 1 / 2^n - 2 Valid when: A finite with n elements, n >= 1 for the second form	dimensionless count
Double power set	n(P(P(A))) = 2^(2^n) Valid when: A finite with n elements	dimensionless count
Two sets	n(A union B) = n(A) + n(B) - n(A int B) Valid when: A and B finite sets	dimensionless count
Exactly one of two	n(A) + n(B) - 2 n(A int B) Valid when: A and B finite sets	dimensionless count
Three sets	sum singles - sum pairs + triple Valid when: A, B, C finite sets (inclusion-exclusion)	dimensionless count
De Morgan	(A union B)' = A' int B'; (A int B)' = A' union B' Valid when: A and B subsets of a universal set	sets
Pairs (A, B) of subsets of an n-set	A union B = X: 3^n; A subset of B: 3^n; disjoint: 3^n Valid when: A, B subsets of an n-element set X	dimensionless count

Full lesson with worked examples:
https://www.engineeringrise.in/learn/learn/jee-main/mathematics/sets-relations-and-functions/sets-power-set-and-algebra-of-sets

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