

JEE CLASS 11 CHEMISTRY • ATOMIC STRUCTURE

# Atomic Number & Mass Number

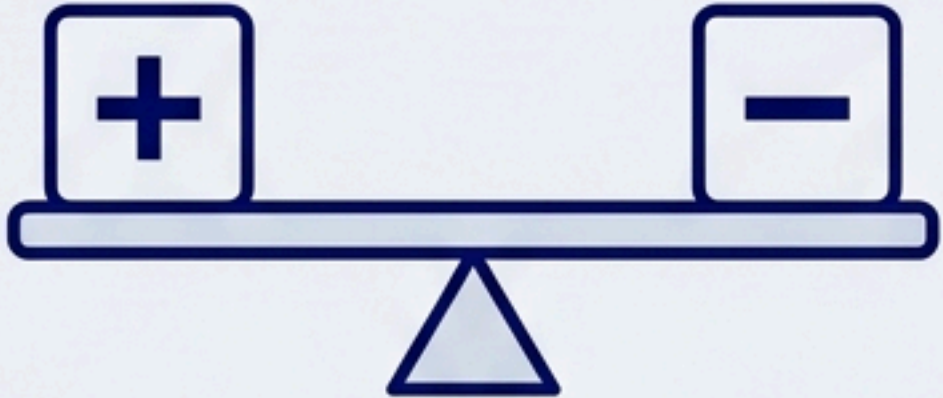
The definitive blueprint for isolating protons, neutrons, and electrons.

# Atomic Number (Z)

$$Z = p$$

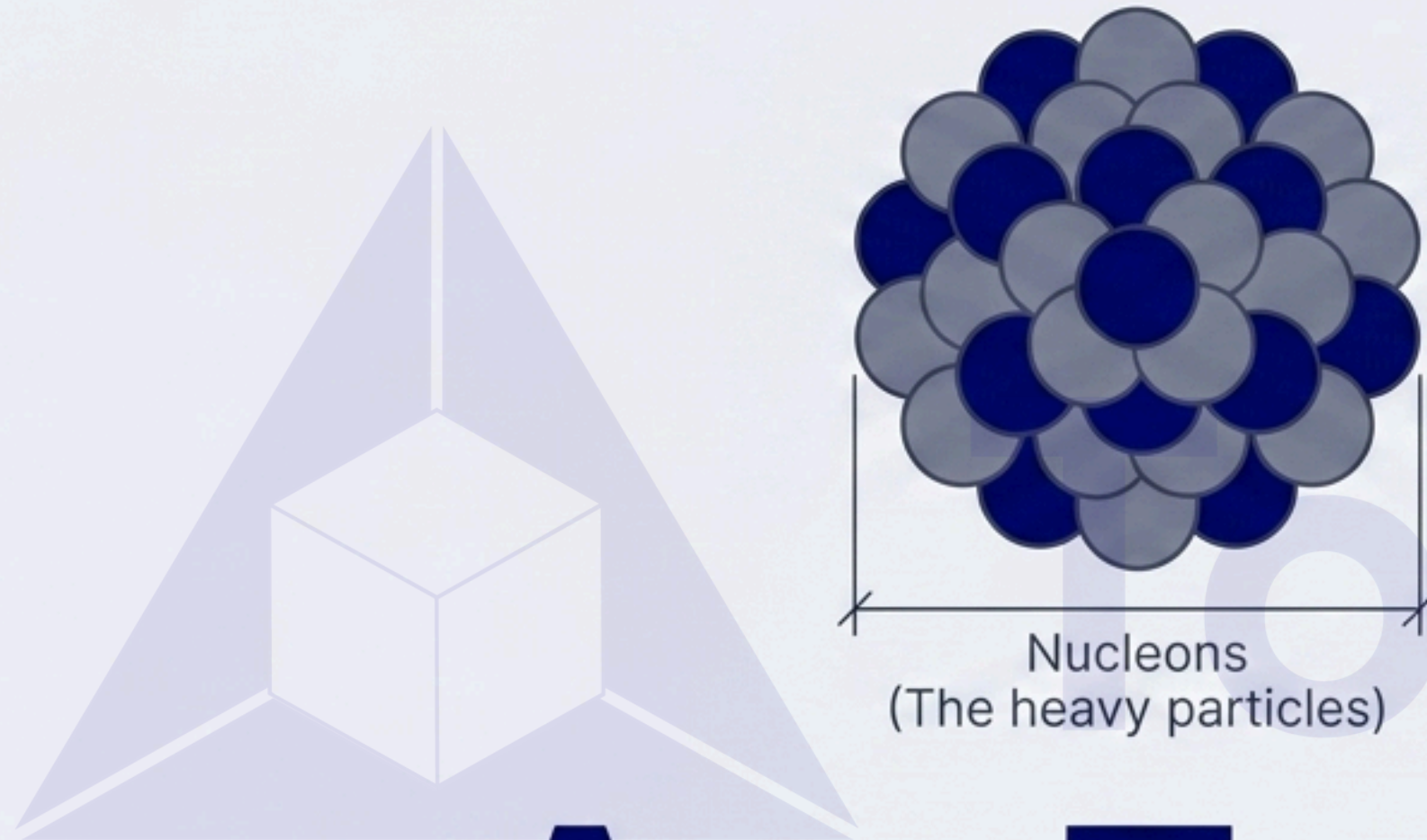
The number of protons inside the nucleus.  
This defines the identity of the element.

If the Atom is **Neutral...**

$$Z = p = e$$


To maintain electrical neutrality, the number of electrons perfectly matches the number of protons.

# Mass Number (A)



$$A = Z + n$$

$\downarrow$                        $\downarrow$                        $\downarrow$

A = Mass Number  
(Total Nucleons)

Z = Protons  
(Atomic Number)

n = Neutrons



# You've Learned the Theory. Let's Test Them Now.

$$E=mc^2$$



Turn theory into marks with **unlimited MCQs, smart analysis, and focused revision.**

**Practice Now**



At [prep.topall.app](https://prep.topall.app)

## Key Highlights

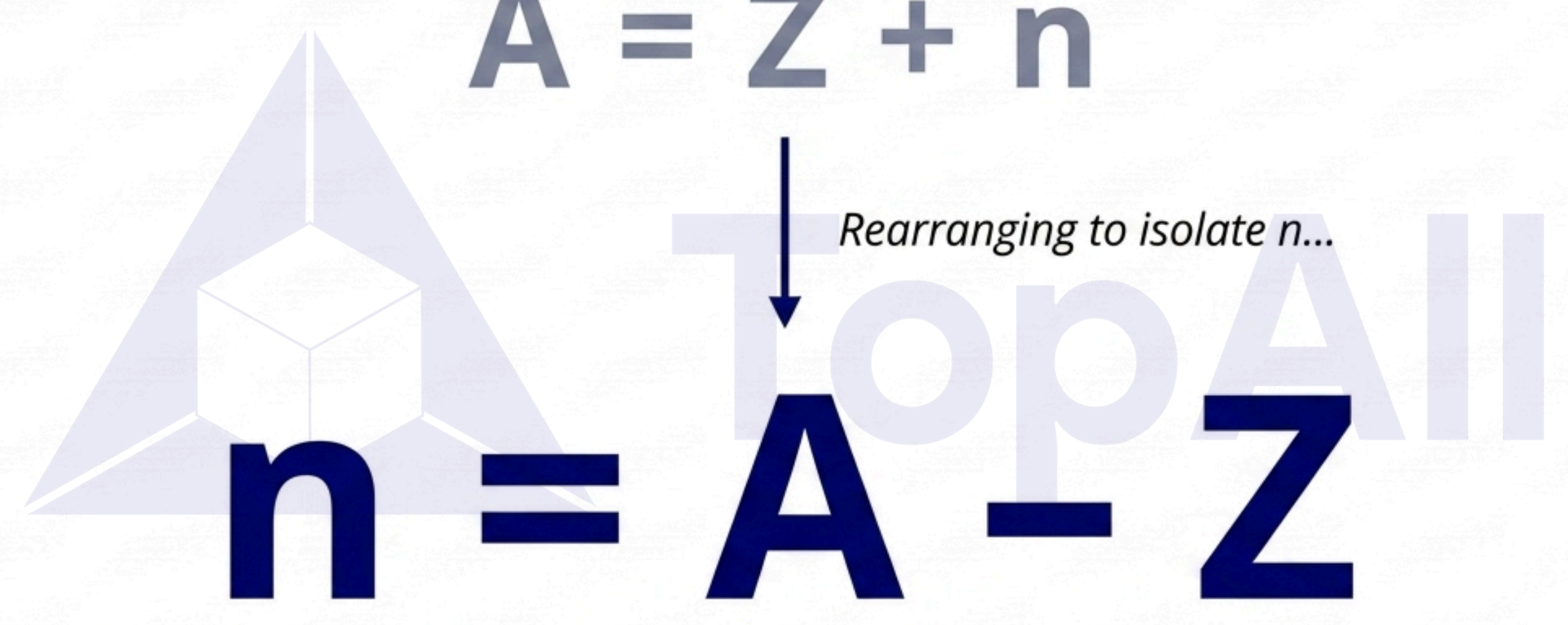
- » Free Study Material, Videos & Infographics
- » Push Your Limits with Level-Based Challenges
- » Climb the Leaderboard Among Fellow Aspirants
- » Practice Unlimited MCQs for NEET & JEE
- » Get Clear Explanations, Not Just Marks
- » Track Your Performance Smarter



# Finding the Neutrons (n)

$$A = Z + n$$

*Rearranging to isolate n...*


$$n = A - Z$$

The number of neutrons is always the difference between the mass number and the atomic number, regardless of whether the species is an ion or a neutral atom.

# Standard Atomic Notation



The chemical properties are controlled by **Z** (protons/electrons).  
A (mass) can vary in isotopes.

# Deduction Flow: Bromine



## Step 1: Extract Z.

Look at the subscript.

$$Z = 35 \text{ (therefore } p = 35)$$



## Step 2: Check Neutrality.

No charge indicated.

$$e = p = 35$$



## Step 3: Calculate n.

Apply  $n = A - Z$ .

$$n = 80 - 35 = 45$$

Protons: 35 | Electrons: 35 | Neutrons: 45

## Key Takeaways

|          |                                            |
|----------|--------------------------------------------|
| <b>Z</b> | Atomic Number (Protons)                    |
| <b>A</b> | Mass Number (Protons + Neutrons)           |
| <b>p</b> | Protons (Always equals Z)                  |
| <b>e</b> | Electrons (Equals Z only in neutral atoms) |
| <b>n</b> | Neutrons (Always $A - Z$ )                 |

### ⚠ The Ion Trap

Before using  $p = e$ , verify if the species is neutral! If it is an ion (cation or anion), the number of electrons changes, but Z and n remain exactly the same. **Do not blindly equate atomic number to electrons in a charged species.**



# You've Learned the Theory.

## Now Let's Test It.

Reading notes gets you knowledge.

**Practicing MCQs gets you marks.**

**That's exactly what TopAll Pro is built for.**

**Try TopAll Pro Now**

### What TopAll Pro Does Differently

-  **Stuck? Snap it. Solve it. — Doubts AI**  
Photo → step-by-step solution in seconds, 24/7
-  **Your AI Coach finds your blind spots**  
Concept-level weakness detection — not just chapter-level
-  **4.5 Lakh+ questions. Never run out.**  
13× more content than any other prep app in India
-  **Build your own test in 60 seconds**  
Pick a chapter, set difficulty — AI does the rest instantly.
-  **AI Recommendation that helps you improve**  
AI Recommendation Analysis your Tests and tell you where you need to improve.



**Practice the moment you finish studying**  
Jump in while the concept is still fresh in your head

**4.5L+**  
MCQs

**1.5L+**  
Students

**AI Powered**  
In-Depth Analysis