



GuideMyGrades

YOUR GOALS. OUR EXPERTISE.

AS Level Chemistry

Examiners' Edition

Securing A*s

FREE SAMPLE

Pearson Edexcel 8CH0

10 Topic Booklets, One For Every Topic

The Marks Students Lose Year After Year, And How To Stop Losing Them.
Every Booklet Comes With Exam-Style Practice Questions And Full Mark Schemes.

This Sample Shows A Few Pages From One Of The Topics.



GuideMyGrades

YOUR GOALS. OUR EXPERTISE.

A Level Chemistry • Topic 1

Atomic Structure and the Periodic Table

*Examiners' Edition: Securing A*s*

14 common mistakes • 28 practice questions • full mark schemes

Written for Pearson Edexcel AS and A Level Chemistry (8CHO, 9CHO).

GuideMyGrades is independent and is not affiliated with or endorsed by Pearson.

All questions are original: none are taken or adapted from a real past paper.

 [guidemygrades.com](https://www.guidemygrades.com)

 [@Guidemygrades](https://www.instagram.com/Guidemygrades)

 [@Guidemygrades](https://www.twitter.com/Guidemygrades)

 [@Guidemygrades](https://www.youtube.com/Guidemygrades)

 info@guidemygrades.com

 Piccadilly Business Centre, Unit C, Aldow Enterprise Park
Blackett Street, Manchester, M12 6AE



1.1 Atoms, ions and isotopes

MEMORISE THIS

protons = Z (never changes)

neutrons = $A - Z$

X^{2-} : electrons = $Z + 2$

X^{2+} : electrons = $Z - 2$

isotopic mass: one atom vs $1/12$ C-12

Ar: weighted mean, vs $1/12$ C-12

1 Counting particles in atoms and ions

AS & A Level

✗ Common mistake

Using the mass number as the proton number, or changing the proton count instead of the electron count when an atom becomes an ion.

✓ Do this instead

- Protons = atomic (proton) number Z . It never changes when an ion forms.
- Neutrons = mass number $A - Z$. Different isotopes have different neutron numbers.
- Electrons: a negative ion has gained electrons (S^{2-} has $16 + 2 = 18$); a positive ion has lost them (Ca^{2+} has $20 - 2 = 18$).
- Relative masses: proton 1, neutron 1, electron $1/1840$ (write "negligible", not 0). Charges: +1, 0, -1.

IN THE EXAM

When filling in a table of subatomic particles, some candidates forgot that a negative ion has extra electrons. (Nov 2021, AL P3)

Exam tip: Write Z , A and the charge next to the symbol before you fill in any table.

Examiners flagged this in: Jun 2018 AL P1, Jun 2019 AS P1, Nov 2021 AL P3, Jun 2022 AL P1, Jun 2023 AS P1, Jun 2024 AL P1

Question 1.1 Check it

[Mark scheme](#)

Sulfur has atomic number 16.

State the numbers of protons, neutrons and electrons in one $^{34}_{16}S^{2-}$ ion.

(3)



Mark schemes

1 Counting particles in atoms and ions

Question 1.1 Check it

[Back to question](#)

Part	Answer	Marks
	protons = 16	1
	neutrons = $34 - 16 = 18$	1
	electrons = $16 + 2 = 18$	1
Total		3

Question 1.2 Apply it

[Back to question](#)

Part	Answer	Marks
(a)	atom has $23 + 3 = 26$ electrons, so 26 protons	1
(a)	X is iron, Fe	1
(b)	$26 + 30 = 56$	1
Total		3

Common wrong answers: For S^{2-} , 14 electrons (subtracting 2) or 34 protons (using A). For X^{3+} , choosing vanadium ($Z = 23$) because the electron count was taken as Z .

2 Defining and using isotopes

Question 2.1 Check it

[Back to question](#)

Part	Answer	Marks
	all have 18 protons (same element)	1
	18, 20 and 22 neutrons respectively	1
Total		2

Question 2.2 Apply it

[Back to question](#)

Part	Answer	Marks
(a)	same number of electrons / same electron configuration ($1s^2 2s^2 2p^6 3s^2$)	1
(a)	chemical reactions depend on electrons (outer electrons)	1
(b)	mass of atom / density / rate of diffusion	1
Total		3

Common wrong answers: "Same element, different mass" without protons and neutrons scores nothing. "Similar chemical properties" alone is not enough: they are the same.

Get The Full Booklets

Every Topic. Every Common Mistake. Every Mark Scheme.

AS Level Chemistry: Securing A*s

- Topic 1** Atomic Structure And The Periodic Table
- Topic 2** Bonding And Structure
- Topic 3** Redox I
- Topic 4** Inorganic Chemistry And The Periodic Table
- Topic 5** Formulae, Equations And Amounts Of Substance
- Topic 6** Organic Chemistry I
- Topic 7** Modern Analytical Techniques I
- Topic 8** Energetics I
- Topic 9** Kinetics I
- Topic 10** Equilibrium I

[guidemygrades.com](https://www.guidemygrades.com)

Your Goals. Our Expertise.