

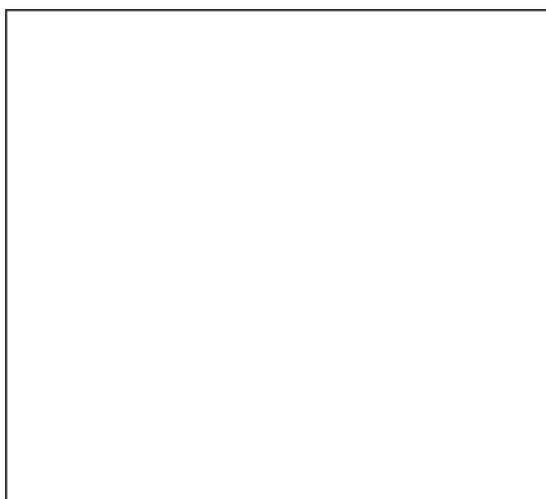
Revision of KS4 Atoms & Elements for KS4 - Worksheet

You will need a copy of the periodic table to complete these questions. The best ones to use are the ones produced by the UK exam boards for KS4 or KS5.

1. Complete the table for the subatomic particles that made up an atom.

Name of sub atomic particle	Mass	Charge

2. Draw an atom of carbon and label all of the subatomic particles



3. Write definitions for the following

Atomic number.....

Atomic mass number.....

Isotope.....

Ion.....

5. Complete the table

Element	Atomic number	Mass number	Protons	Neutrons	Electrons	Electron configuration
Hydrogen						
Lithium						
Boron						
Nitrogen						
Aluminium						

6. In terms of the number of their fundamental particles, what do two isotopes of an element have in common and how do they differ?

In common

Difference

7. Give the electronic configuration of the F^- ion

.....

8. An atom of chlorine has an atomic number of 17 and a mass number of 35.

How many protons, neutrons & electrons does it contain

p.....n.....e.....

9. Calculate the Mr of the following

- HCl
- NH_3
- $CuSO_4$
- $Ca(NO_3)_2$

Extension Questions

1. Give the symbol, including mass number and atomic number, for the isotope which has a mass number of 34 and which has 18 neutrons in each nucleus.

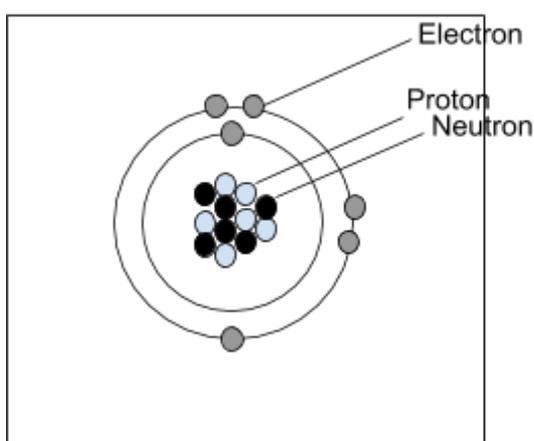
2. Give the symbol, including the mass number and the atomic number, for the atom which has 3 fewer neutrons and 2 fewer protons than N.

Revision of KS4 Atoms & Elements for KS4 - Worksheet (Answers)

1. Complete the table for the subatomic particles that made up an atom.

Name of sub atomic particle	Mass	Charge
Proton	1	+1
neutron	1	0
electron	1/2000	-1

2. Draw an atom of carbon and label all of the sub- atomic particles



3. Write definitions for the following

Atomic number **Number of protons in an atom of an element**

Atomic mass number **Proton + neutrons**

Isotope **atom with the same number of protons but different numbers of neutrons**

Ion **An atom that has lost or gained electrons to form a charge particle**

5. Complete the table

Element	Atomic number	Mass number	Protons	Neutrons	Electrons	Electron configuration
Hydrogen	1	1	1	0	1	1
Lithium	3	7	3	4	3	2,1
Boron	5	11	5	6	5	2,3
Nitrogen	7	14	7	7	7	2,5
Aluminium	13	27	13	14	13	2,8,3

6. In terms of the number of their fundamental particles, what do two isotopes of an element have in common and how do they differ?

In common **same number of protons**

Difference **different number of neutrons**

7. Give the electronic configuration of the F⁻ ion

10 electrons 2,8

8. An atom of chlorine has an atomic number of 17 and a mass number of 35.

How many protons, neutrons & electrons does it contain

p.....**17**.....n.....**17**.....e...**18**....

9. Calculate the Mr of the following

e) HCl **1+35.5 = 36.6**

f) NH₃ **14+ (3x1) = 17**

g) CuSO₄ **63.5+32+(16x4) = 159.5**

h) Ca(NO₃)₂ **40+(2x(14+(3x16))) = 182**

Extension Questions

3. Give the symbol, including mass number and atomic number, for the isotope which has a mass number of 34 and which has 18 neutrons in each nucleus.

Number of protons = 34-18 = 16, so its sulfur



4. Give the symbol, including the mass number and the atomic number, for the atom which has 3 fewer neutrons and 2 fewer protons than N.

N has protons =7 neutrons =7 (from the periodic table)

new element has protons = 7-2 = 5, so the element is Boron

neutrons = 7-3 = 4, so the mass number is 5+4 = 9

