

Atomic structure summary

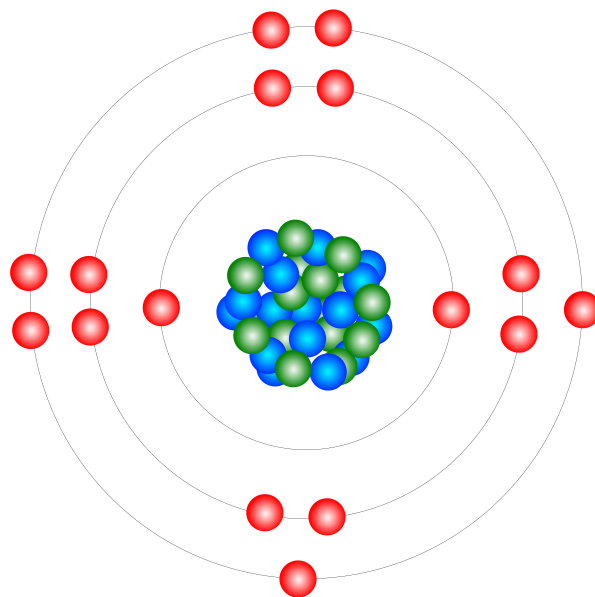
An **atom** is the smallest particle of an element that still has the chemical properties of the element. Atoms are made of smaller sub-atomic particles.

The three main sub-atomic particles are **protons**, **neutrons** and **electrons**. The **nucleus** of an atom contains the protons and neutrons. The electrons orbit the nucleus and are arranged in **shells**.

sub-atomic particle	relative mass	relative charge
proton	1	+1
neutron	1	0
electron	~1/2000	-1

electron shell	max number of electrons
1	2
2	8
3	8

Atom diagram $^{32}_{16}\text{S}$



Mass number: M
the number of
protons + neutrons

M

Element symbol: X

X

Atomic number: A
the number of protons

A

Atomic structure number quiz

1. The mass number of ^7_3Li
2. The mass number of ^4_2He
3. The mass number of ^1_1H
4. The relative charge carried by a neutron
5. The relative charge carried by a proton
6. The relative mass of a neutron
7. The relative mass of a proton
8. The number of protons in $^{14}_7\text{N}$
9. The number of protons in ^9_4Be
10. The number of protons in $^{11}_5\text{B}$

Atomic structure number quiz continued

11. The number of protons in ${}^1_1\text{H}$
12. The number of electrons in a neutral atom of ${}^{16}_8\text{O}$
13. The number of electrons in a positive ion of ${}^1_1\text{H}$
14. The number of electrons in a neutral atom of ${}^1_1\text{H}$
15. The number of neutrons in an atom of ${}^{11}_5\text{B}$
16. The number of neutrons in an atom of ${}^{12}_6\text{C}$
17. The number of neutrons in an atom of ${}^{13}_6\text{C}$
18. The number of neutrons in an atom of ${}^1_1\text{H}$
19. The atomic number of an element is 20. How many electrons exist in its outermost shell?
20. The atomic number of an element is 6. How many electrons exist in its outermost shell?
21. The atomic number of an element is 10. How many electrons exist in its outermost shell?
22. The atomic number of an element is 12. How many electrons exist in its outermost shell?
23. The atomic number of an element is 20. How many electrons exist in its innermost shell?
24. The atomic number of an element is 20. How many electrons exist in its second shell?
25. The atomic number of an element is 5. Which group of the periodic table is it in?
26. The atomic number of an element is 11. Which group of the periodic table is it in?
27. The atomic number of an element is 17. Which group of the periodic table is it in?
28. The atomic number of an element is 8. Which group of the periodic table is it in?
29. The atomic number of an element is 3. Which group of the periodic table is it in?
30. A Lithium atom has a mass number of 7 and its nucleus contains 3 protons. How many neutrons does it have?
31. How many neutrons are there in this isotope of hydrogen: ${}^2_1\text{H}$
32. How many neutrons are there in this isotope of hydrogen: ${}^3_1\text{H}$
33. How many protons are there in this isotope of hydrogen: ${}^3_1\text{H}$
34. The maximum number of electrons that can occupy the first shell is ...
35. The maximum number of electrons that can occupy the second shell is ...
36. An atom has 12 neutrons, 12 protons and 12 electrons. What is its overall charge?
37. An atom has 12 neutrons, 12 protons and 10 electrons. What is its overall charge?
38. How many electrons do elements in group 5 have in their outermost shell?
39. An element with 4 electrons in its outermost shell would be in which group?
40. A neutral atom has a total of 13 electrons. Which group of the periodic table is it in?

**Now play the “Atomic structure: bounce quiz”
at the eChalk website to check your answers.**