

Exploring Inside Atoms

Combined science - Physics - Key stage 4 - **Atomic Structure**

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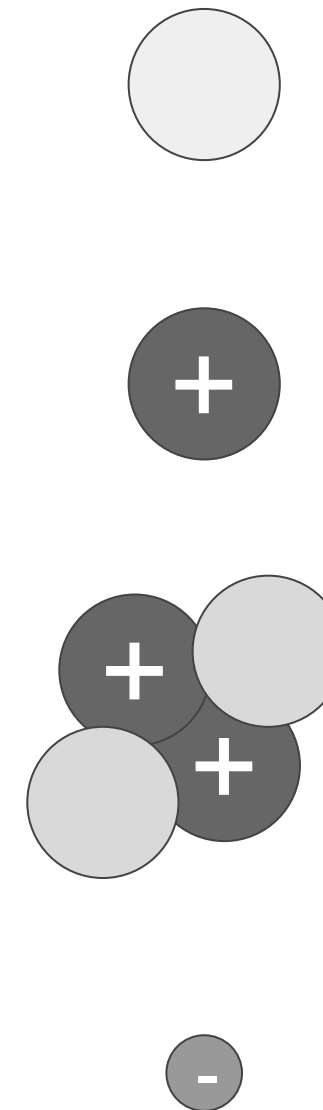
Match up these key words to the diagram that represents it.

Protons

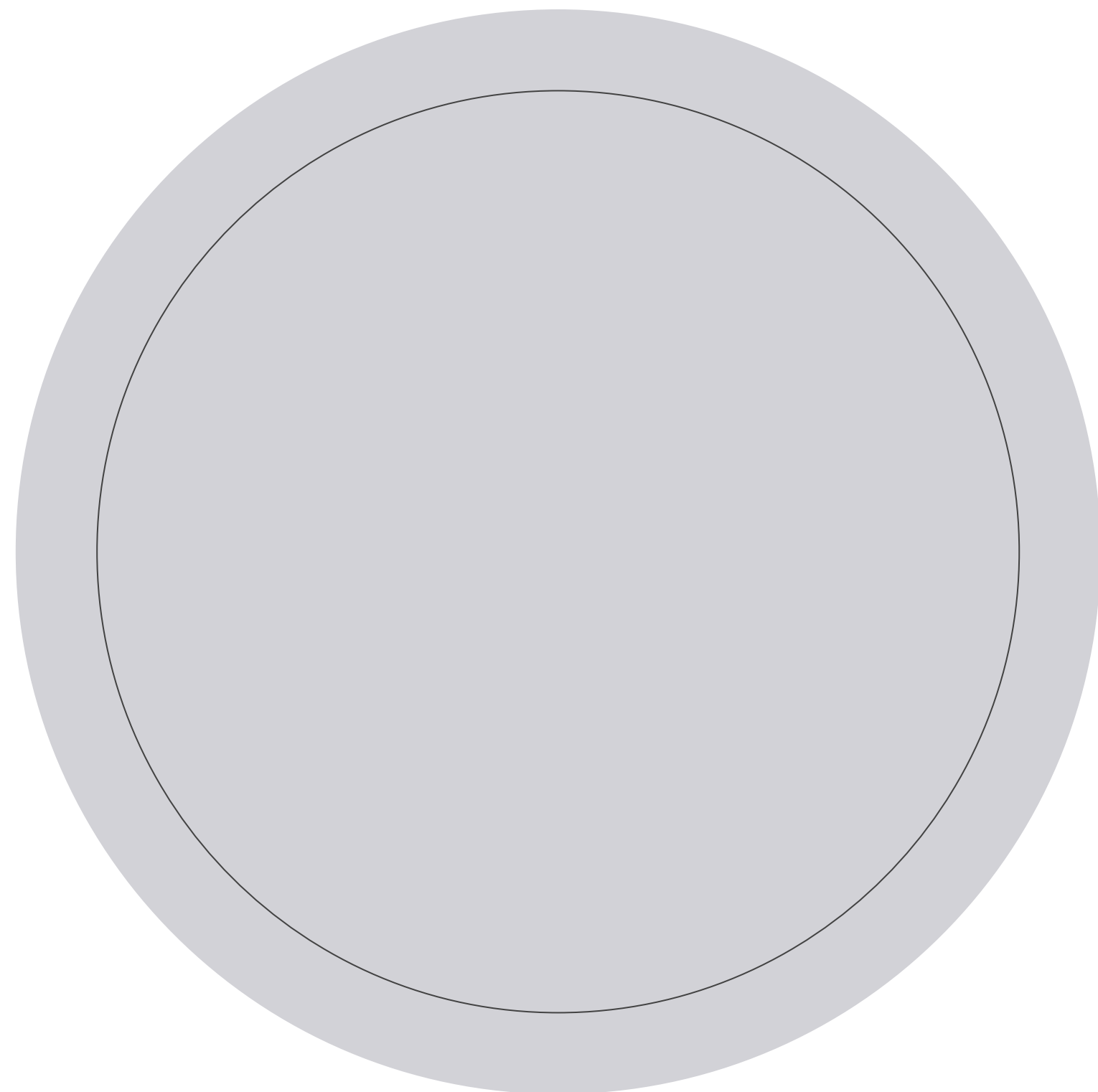
Nucleus

Electrons


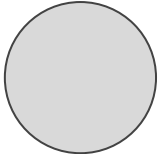

Neutrons



Draw a labelled diagram of an atom



What is each particle like?

Particle		Charge	Relative mass
Proton			
Neutron			
Electron			



Independent practice

1. What is the charge on the nucleus?
 - The charge on the nucleus is _____
2. Why is the charge on an atom neutral?
 - The charge on an atom is _____ because there are _____ numbers of _____ and _____.
3. An atom has 5 protons in its nucleus. What is the charge on the nucleus and the charge of the atom overall? Use numbers.
 - The charge on the nucleus is _____ and the charge on the atom overall is _____.



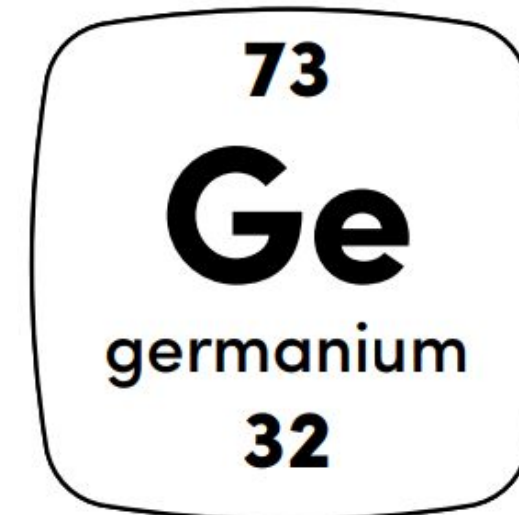
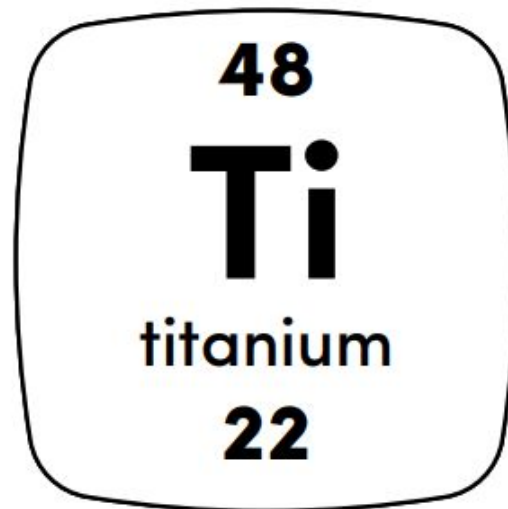
Independent practice

1. There are 118 different types of a_____. They differ in their numbers of p_____, n_____ and e_____. If a s_____ is made of one type of atom, it is called an e_____. The different atoms and the name of the elements they make up are found in the p_____ t_____ of e_____ and are represented by a symbol (e.g. Na = _____).
2. If an atom has 9 protons and no neutrons, what would its relative mass be?
3. If an atom has 12 neutrons only, what would its relative mass be?
4. An atom has 14 neutrons and 8 protons. What would its relative mass be?
5. An atom has 21 neutrons, 20 protons and 20 electrons. What is its relative mass?



Nuclear notation

For the two atoms below, state the protons and the number of neutrons



Periodic Table of Elements

Key:

relative atomic mass

1

H

hydrogen

1

Atomic symbol

H

Atomic (proton number)

1

1 H hydrogen 1																	4 He helium 2
7 Li lithium 3	9 Be beryllium 4											11 B boron 5	12 C carbon 6	14 N nitrogen 7	16 O oxygen 8	19 F fluorine 9	20 Ne neon 10
23 Na sodium 11	24 Mg magnesium 12											27 Al aluminium 13	28 Si silicon 14	31 P phosphorus 15	32 S sulfur 16	35.5 Cl chlorine 17	40 Ar argon 18
39 K potassium 19	40 Ca calcium 20	45 Sc scandium 21	48 Ti titanium 22	51 V vanadium 23	52 Cr chromium 24	55 Mn manganese 25	56 Fe iron 26	59 Co cobalt 27	59 Ni nickel 28	63.5 Cu copper 29	65 Zn zinc 30	70 Ga gallium 31	73 Ge germanium 32	75 As arsenic 33	79 Se selenium 34	80 Br bromine 35	84 Kr krypton 36
85 Rb rubidium 37	88 Sr strontium 38	89 Y yttrium 39	91 Zr zirconium 40	93 Nb niobium 41	96 Mo molybdenum 42	[97] Tc technetium 43	101 Ru ruthenium 44	103 Rh rhodium 45	106 Pd palladium 46	108 Ag silver 47	112 Cd cadmium 48	115 In indium 49	119 Sn tin 50	122 Sb antimony 51	128 Te tellurium 52	127 I iodine 53	131 Xe xenon 54
133 Cs caesium 55	137 Ba barium 56	139 La* lanthanum 57	178 Hf hafnium 72	181 Ta tantalum 73	184 W tungsten 74	186 Re rhenium 75	190 Os osmium 76	192 Ir iridium 77	195 Pt platinum 78	197 Au gold 79	201 Hg mercury 80	204 Tl thallium 81	207 Pb lead 82	209 Bi bismuth 83	[209] Po polonium 84	[210] At astatine 85	[222] Rn radon 86
[223] Fr francium 87	[226] Ra radium 88	[227] Ac* actinium 89	[267] Rf rutherfordium 104	[270] Db dubnium 105	[269] Sg seaborgium 106	[270] Bh bohrium 107	[270] Hs hassium 108	[278] Mt meitnerium 109	[281] Ds darmstadtium 110	[281] Rg roentgenium 87	[285] Cn copernicium 112	[286] Nh nihonium 113	[289] Fl flerovium 114	[289] Mc moscovium 115	[293] Lv livermorium 116	[293] Ts tennessine 117	[294] Og oganesson 118



Use a periodic table to find the following information.

1. The number of protons in Carbon.
2. The number of protons in Helium.
3. The number of electrons in Zinc.
4. The number of neutrons in Sodium.
5. The number of neutrons in Iron.
6. The proton number of Copper.
7. The number of electrons in Rb.
8. The proton number of Ge.
9. The overall charge on the atom of W.
10. The number of neutrons in phosphorus.

