Subatomic particle calculations

1. Complete the table below. Use a GCSE periodic table to help you, but do **not** use the relative atomic masses there (they are **not** mass numbers). One row has been done for you.

Name	Isotopic symbol	Atomic number	Mass number	Number of:		
				Protons	Neutrons	Electrons
Hydrogen	$^{1}_{1}H$		1		0	
Lithium	$^{7}_{3}Li$	3			4	
Oxygen	$^{18}_{8}O$	8	18	8	(18 – 8) = 10	8
Aluminium		13		13	14	
	$^{37}_{17}Cl$	17				17
Argon					22	
Copper			65		36	
			81			35
	$^{238}_{92}U$					

2. (a) Explain why atoms are neutral, even though protons and electrons are charged particles.

   (b) Explain why the number of electrons is not included in mass numbers.

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Oxygen	$^{18}_{8}O$	8	18	8	(18 – 8) = 10	8
Aluminium	$^{27}_{13}Al$	13	27	13	14	13
Chlorine	$^{37}_{17}Cl$	17	37	17	(37 – 17) = 20	17
Argon	$^{40}_{18}Ar$	18	40	18	22	18
Copper	$^{65}_{29}Cu$	29	65	29	36	29
Bromine	$^{81}_{35}Br$	35	81	35	(81 – 35) = 46	35
Uranium	$^{238}_{92}U$	92	238	92	(238 – 92) = 146	92

2. (a) The number of positive protons is equal to the number of negative electrons.

   (b) The mass of an electron is negligible / very small compared to the mass of a nucleus.

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