



1 Complete the table about these atoms and ions.

atom / ion	protons	neutrons	electrons	electron structure
${}_{13}^{27}\text{Al}$	13	14	13	2,8,3
${}_{13}^{27}\text{Al}^{3+}$	13	14	10	2,8
${}_{8}^{17}\text{O}$	8	9	8	2,6
${}_{8}^{17}\text{O}^{2-}$	8	9	10	2,8

2 The electron structure of some atoms are given. Which group of the Periodic Table does each of these atoms belong to?

electron structure	2,8,7	2,8,8,1	2,8,18,3	2,8,18,18,6	2,8
group	7	1	13	6	8 / 0

3 There are two isotopes of boron, which are shown in the table.

isotope	${}_{5}^{10}\text{B}$	${}_{5}^{11}\text{B}$
abundance	19.9%	80.1%

- a Explain why they are both atoms of boron. **both contain 5 protons**
- b The radius of a boron atom is 180 pm. Write this in metres in standard form.  **$1.8 \times 10^{-10} \text{ m}$**
- c Calculate the relative atomic mass of boron to 3 significant figures.

$$\text{relative atomic mass} = \frac{(10 \times 19.9) + (11 \times 80.1)}{19.9 + 80.1} = 10.8$$