Name Date

Worksheet 2.1: The atomic structure

**1** Work out the numbers of protons, neutrons and electrons for the following atoms and ions:

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **p** | **n** | **e** |
| 10Be |  |  |  |
| 18O2− |  |  |  |
| 33P |  |  |  |
| 45Sc3+ |  |  |  |
| 59Co |  |  |  |
| 80Br− |  |  |  |
| 87Sr |  |  |  |
| 118Sn4+ |  |  |  |
| 131Xe |  |  |  |
| 207Pb2+ |  |  |  |

**2** Calculate the number of subatomic particles for the following molecules and ions.  
Assume that for each element its most abundant isotope is present:



|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **p** | **n** | **e** |
| HCl |  |  |  |
| OH− |  |  |  |
| NH3 |  |  |  |
| SO42− |  |  |  |
| PCl3 |  |  |  |
| NO2+ |  |  |  |
| BeCl2 |  |  |  |
| CN− |  |  |  |
| [Fe(H2O)6]3+ |  |  |  |
| [CuCl4]2− |  |  |  |

**3** **a** Boron has two stable isotopes: 10B (natural abundance 19.9%) and 11B (natural abundance   
 80.1%). What is the relative atomic mass of boron? Present your answer to 3 significant figures.

**b** Antimony has two stable isotopes: 121Sb and 123Sb. Its relative atomic mass is 121.75.   
What is the natural abundance of 121Sb?