

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
$^{10}\text{Be}$			
$^{18}\text{O}^{2-}$			
$^{33}\text{P}$			
$^{45}\text{Sc}^{3+}$			
$^{59}\text{Co}$			
$^{80}\text{Br}^{-}$			
$^{87}\text{Sr}$			
$^{118}\text{Sn}^{4+}$			
$^{131}\text{Xe}$			
$^{207}\text{Pb}^{2+}$			

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			
$\text{OH}^{-}$			
$\text{NH}_3$			
$\text{SO}_4^{2-}$			
$\text{PCl}_3$			
$\text{NO}_2^{+}$			
$\text{BeCl}_2$			
$\text{CN}^{-}$			
$[\text{Fe}(\text{H}_2\text{O})_6]^{3+}$			
$[\text{CuCl}_4]^{2-}$			

- 3 a** Boron has two stable isotopes:  $^{10}\text{B}$  (natural abundance 19.9%) and  $^{11}\text{B}$  (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:  $^{121}\text{Sb}$  and  $^{123}\text{Sb}$ . Its relative atomic mass is 121.75. What is the natural abundance of  $^{121}\text{Sb}$ ?