Worksheet 2.2

Isotopes and relative atomic masses

1 The table below shows the isotopes of two elements, magnesium and neon. Copy and complete the table.

Magnesium isotopes	$^{24}_{12}\text{Mg}$	$^{25}_{12}\text{Mg}$	$^{26}_{12}\text{Mg}$
Number of protons			
Number of electrons			
Number of neutrons			
Neon isotopes	$^{20}_{10}\text{Ne}$	$^{21}_{10}\text{Ne}$	$^{22}_{10}\text{Ne}$
Number of protons			
Number of electrons			
Number of neutrons			

[6]

2 The relative atomic mass of an element is the weighted average atomic mass of the element relative to $\frac{1}{12}$ the mass of an atom of the ^{12}C isotope.

a What does the word **weighted** mean in the definition? [2]

b Why use $\frac{1}{12}$ the mass of an atom of the ^{12}C isotope? [2]

3 The relative atomic mass of chlorine is 35.5. What does this tell you about the relative abundance of the two naturally occurring isotopes of chlorine, $^{35}_{17}\text{Cl}$ and $^{37}_{17}\text{Cl}$? Explain your answer. [2]

4 The table below shows the naturally occurring isotopes of magnesium and neon along with their relative abundance. Calculate the relative atomic mass for each element.

	Magnesium		
Atomic mass of isotope	24	25	26
Relative abundance / %	78.60	10.11	11.29
	Neon		
Atomic mass of isotope	20	21	22
Relative abundance / %	90.92	0.26	8.82

[6]