

Worksheet 1.2

Calculation of relative masses

NAME:

CLASS:

INTRODUCTION

The determination of relative atomic mass is important, as it represents an element accurately.

No.	Question	Answer	
1	Complete the table.		
	Term	Definition	Symbol
	Relative atomic mass		
	Relative isotopic mass		
	Percentage abundance		
2	Explain why the relative atomic mass of carbon is 12.01, even though carbon (mass of exactly 12) is used as the standard on which relative mass is determined.		
3	The element sulfur has three isotopes: ^{32}S , ^{33}S and ^{34}S . If their relative isotopic masses and percentage abundances are 31.97 (95.0%), 32.97 (0.77%) and 33.97 (4.23%) respectively, determine the relative atomic mass of sulfur.		

Worksheet 1.2

Calculation of relative masses

No.	Question	Answer																		
4	A certain element has two isotopes of relative isotopic masses x and $x + 4$. If the abundance of each isotope is the same, calculate the relative atomic mass of this element (in terms of x).																			
5	Calculate the relative atomic mass of zinc, given that it has five isotopes as shown below. <table border="1"><thead><tr><th>Isotope</th><th>I_r</th><th>% abundance</th></tr></thead><tbody><tr><td>^{64}Zn</td><td>63.93</td><td>48.89</td></tr><tr><td>^{66}Zn</td><td>65.93</td><td>27.81</td></tr><tr><td>^{67}Zn</td><td>66.93</td><td>4.11</td></tr><tr><td>^{68}Zn</td><td>67.93</td><td>18.57</td></tr><tr><td>^{70}Zn</td><td>69.93</td><td>0.62</td></tr></tbody></table>	Isotope	I_r	% abundance	^{64}Zn	63.93	48.89	^{66}Zn	65.93	27.81	^{67}Zn	66.93	4.11	^{68}Zn	67.93	18.57	^{70}Zn	69.93	0.62	
Isotope	I_r	% abundance																		
^{64}Zn	63.93	48.89																		
^{66}Zn	65.93	27.81																		
^{67}Zn	66.93	4.11																		
^{68}Zn	67.93	18.57																		
^{70}Zn	69.93	0.62																		
6	Bromine has a relative atomic mass of 79.91. It has two isotopes: ^{79}Br of I_r 78.92 and percentage abundance 50.54%, and ^{81}Br . Determine both the percentage abundance and the relative isotopic mass of the second isotope.																			
7	Calculate the relative molecular mass of each of the following compounds. a Hydrogen perchlorate (HOCl) b Ammonium sulfate ($(\text{NH}_4)_2\text{SO}_4$) c Urea ($(\text{NH}_2)_2\text{CO}$) d Hydrogen peroxide (H_2O_2)																			
8	Calculate the relative formula mass of each of the following compounds. a Lead(IV) oxide (PbO_2) b Aluminium iodide (AlI_3) c Calcium carbonate (CaCO_3) d Lithium sulfide (Li_2S)																			

Worksheet 1.2

Calculation of relative masses

No.	Question	Answer
9	An oxide of nitrogen has a relative molecular mass of 46.01. What is the formula of this oxide?	
10	Tin exists as +2 and +4 ions in its compounds. Determine the relative formula masses of the two possible tin chlorides.	