

The image features two ball-and-stick molecular models. On the left, a water molecule (H2O) is shown with a central yellow sphere (oxygen) bonded to two red spheres (hydrogen). On the right, a methane molecule (CH4) is shown with a central black sphere (carbon) bonded to four white spheres (hydrogen). Both models are set against a light grey background and are partially enclosed by a red, rounded rectangular border.

Online and Home Chemistry Tuition

Online, Brighton and Worthing

<https://www.chemistrytuition.net/>

Key Concepts for
A Level
Chemistry

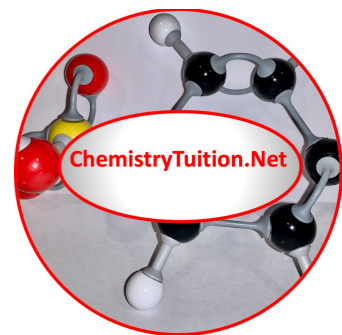
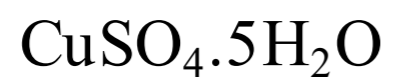
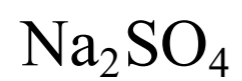
Introduction to Chemistry

Calculations - Quiz 1

This resource may be downloaded for free at

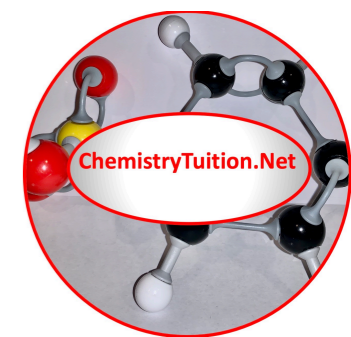
<https://www.chemistrytuition.net/chemistry-calculations>

Calculate the Molar Mass of:



Calculate the Molar Mass of:

Na_2SO_4	$(2 \times 23) + 32 + (4 \times 16) = 142$
KMnO_4	$39 + 55 + (4 \times 16) = 158$
$\text{Al}_2(\text{SO}_4)_3$	$(2 \times 27) + (3 \times 32) + (12 \times 16) = 342$
$\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$	$63.5 + 32 + (4 \times 16) + (5 \times 18) = 249.5$

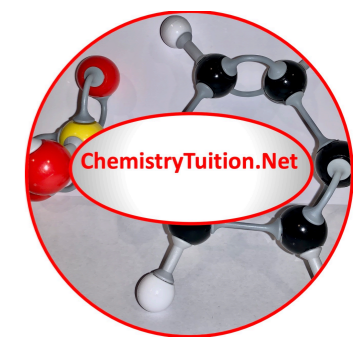


Calculate the number of moles of the material in:

1.435 g of AgNO_3

13.76 g of NH_4Cl

13.76 g of $(\text{NH}_4)_2\text{SO}_4$



Calculate the number of moles of the material in:

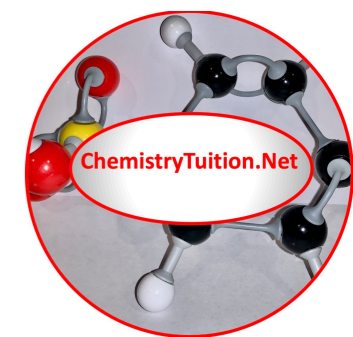
1.435 g of AgNO_3

13.76 g of NH_4Cl

13.76 g of $(\text{NH}_4)_2\text{SO}_4$

Hint - You need to use

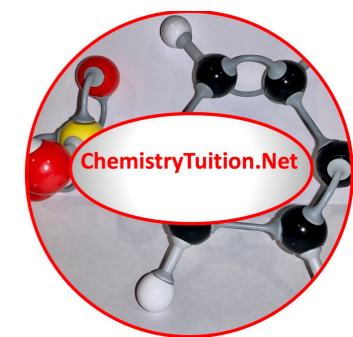
$\text{Moles} = \text{Mass} / \text{Relative Molecular Mass}$



Calculate the number of moles of the material in:

1.435 g of AgNO_3	$107.9 + 14 + (3 \times 16) = 169.9$
13.76 g of NH_4Cl	$14 + 4 + 35.5 = 53.5$
13.76 g of $(\text{NH}_4)_2\text{SO}_4$	$(2 \times 18) + 32 + (4 \times 16) = 132$

Moles =	$1.435/169.9 =$	0.0084
Moles =	$13.76/53.5 =$	0.2572
Moles =	$13.76/132 =$	0.1042

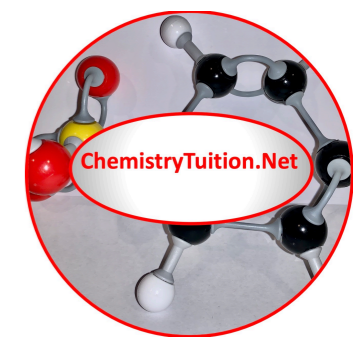


Calculation of the mass of material in:

0.10 moles of KClO_3

2.4 moles of $(\text{COOH})_2 \cdot 2\text{H}_2\text{O}$

3.075 moles of $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$



Calculation of the mass of material in:

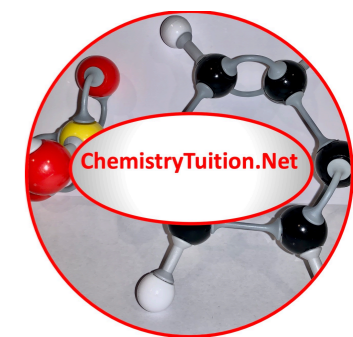
0.10 moles of KClO_3

2.4 moles of $(\text{COOH})_2 \cdot 2\text{H}_2\text{O}$

3.075 moles of $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$

Hint - You need to use

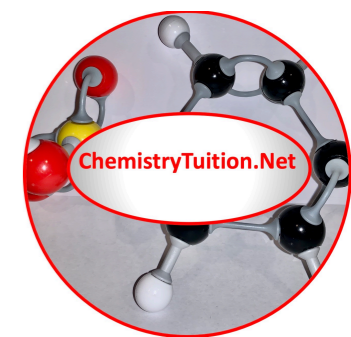
Mass = moles x relative molecular mass



Calculation of the mass of material in:

0.10 moles of KClO_3	$39 + 35.5 + (3 \times 16) = 122.5$
2.4 moles of $(\text{COOH})_2 \cdot 2\text{H}_2\text{O}$	$2 \times (12 + 16 + 16 + 1) + (2 \times 18) = 126$
3.075 moles of $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$	$24.3 + 32 + (4 \times 16) + (7 \times 18) = 246.3$

Mass =	$0.10 \times 122.5 =$	12.3 g
Mass =	$2.4 \times 126 =$	302.4 g
Mass =	$3.075 \times 246.3 =$	757.4 g





Online and Home Chemistry Tuition

Online, Brighton and Worthing

<https://www.chemistrytuition.net/>

Dr Simon Orchard