



1 Calculate the relative formula mass (M_r) of each of the following substances.

a CO_2 $12 + 2(16) = 44$

b Mg 24

c sodium oxide Na_2O $2(23) + 16 = 62$

d calcium nitrate $\text{Ca}(\text{NO}_3)_2$ $40 + 2(14) + 6(16) = 164$

2 Calculate the mass in grams of one atom of ^{19}F . Give your answer in standard form to 3 significant figures.
(the Avogadro constant = $6.022 \times 10^{23} \text{ mol}^{-1}$)

$$\text{mass of one atom} = \frac{19}{6.022 \times 10^{23}} = 3.16 \times 10^{-23} \text{ g}$$

3 One molecule of water has a mass of $2.99 \times 10^{-23} \text{ g}$. Use this to calculate the mass in grams of two moles of water molecules.

$$\text{mass of two moles} = 2 \times 6.022 \times 10^{23} \times 2.99 \times 10^{-23} = 36 \text{ g}$$