

Name:

Class:



Give the figure for Avogadro's constant.

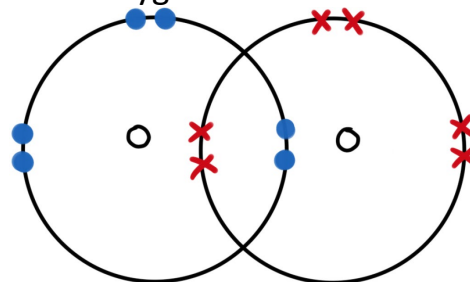
$$6.02 \times 10^{23}$$

Calculate the number of water molecules in 72 g of water, H₂O.

$$72 \div 18 = 4 \text{ moles of water.}$$

$$4 \times 6.02 \times 10^{23} = 2.41 \times 10^{24}$$

Draw a dot and cross diagram for the molecule of oxygen.

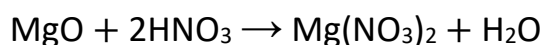
Magnesium nitrate has the formula Mg(NO₃)₂.

Calculate the relative formula mass of magnesium nitrate.

$$24 + 2(14) + 6(16) = 148$$

A student is reacting magnesium oxide with nitric acid.

Look at the equation for the reaction.

The student wants to make 14.8 g of magnesium nitrate, Mg(NO₃)₂.

Calculate the masses of magnesium oxide and nitric acid that he needs.

$$148 \text{ g} = 1 \text{ mole}$$

$$\text{Mass MgO} = \text{mol} \times \text{Mr}$$

$$\text{Mass of HNO}_3 = \text{mol} \times \text{Mr}$$

$$1 \text{ g} = \frac{1}{148}$$

$$\text{Mass} = 0.1 \times 40$$

$$\text{Mass} = 0.2 \times 63$$

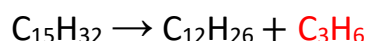
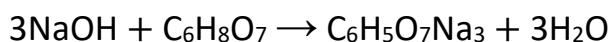
$$14.8 \text{ g} = 0.1 \text{ mol}$$

$$\text{Mass} = 4 \text{ g}$$

$$\text{Mass} = 12.6 \text{ g}$$

$$\text{Mass of magnesium oxide needed} = 4 \text{ g}$$

$$\text{Mass of nitric acid needed} = 12.6 \text{ g}$$

Write the half equation for the formation of hydrogen gas, H₂, from hydrogen ions, H⁺.Complete the equation for the cracking of C₁₅H₃₂.13.3 cm³ of 0.0500 mol/dm³ citric acid solution was needed to neutralise 25.0 cm³ of sodium hydroxide solution. The equation for the reaction is:Calculate the concentration of the sodium hydroxide solution in mol/dm³

$$\text{Moles of citric acid} = \text{concentration} \times \text{volume}$$

$$\text{Concentration} = \frac{133}{200000} \div 0.025$$

$$\text{Moles of citric acid} = 0.0500 \times 0.0133$$

$$\text{Concentration} = 0.0266 \times 3$$

$$\text{Moles of citric acid} = \frac{133}{200000} \text{ or } 6.65 \times 10^{-4}$$

$$\text{Concentration} = 0.0798 \text{ mol/dm}^3$$

$$\text{Concentration} = 0.0798 \text{ mol/dm}^3$$