

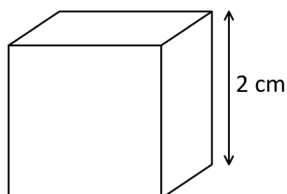
Name:

Class:



The length of one side of a cube of silver is 2 cm as shown below.

Calculate the surface area to volume ratio of this cube of silver.



$$\text{Surface area} = 6 \times 2 \times 2 = 24\text{cm}^2$$

$$\text{Volume} = 2 \times 2 \times 2 = 8\text{cm}^3$$

$$\text{Surface area to volume ratio} = 24 : 8$$

$$\text{Surface area to volume ratio} = 3 : 1$$

Sodium hydroxide solution is used to distinguish between Fe^{2+} ions and Fe^{3+} ions in solution.

Describe what is **seen** when sodium hydroxide solution is added to each of these solutions.

Solution of Fe^{2+} ions = green precipitate.

Solution of Fe^{3+} ions = brown precipitate.

Describe a test to show the gas is ammonia.

Test: moist/damp red litmus.

Result: if the gas is ammonia the damp red litmus paper will turn blue.

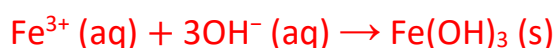
State the formula of a hydrogencarbonate ion.



State the formula of an **ammonium** ion.



Iron(III) ions, Fe^{3+} , react with hydroxide ions in solution to form iron (III) hydroxide solid. Write the ionic equation for this reaction.



Complete and balance the equation for the reaction.



The tablet has a mass of 1.20 g and contains 700 mg of lithium carbonate. Calculate the percentage by mass of lithium carbonate in this tablet.

$$1.20 \times 1000 = 1200 \text{ mg}$$

$$700 \div 1000 = 0.700 \text{ g}$$

$$\frac{700 \text{ mg}}{1200 \text{ mg}} \times 100 = \mathbf{58.3\%}$$

or

$$\frac{0.700 \text{ g}}{1.20 \text{ g}} \times 100 = \mathbf{58.3\%}$$

Calcium carbonate thermally decomposes to make calcium oxide and carbon dioxide.



Calculate the mass of calcium carbonate needed to make 209 g of calcium oxide.

Give your answer to three significant figures.

$$\text{Mol} = \text{mass} \div \text{Mr}$$

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

$$\text{Mol} = 209 \div 56 \quad \text{Mol} = \frac{209}{56}$$

$$\text{Mass} = \frac{209}{56} \times 100$$

$$\text{mass of calcium carbonate} = \mathbf{373 \text{ g}}$$