MOLAR VOLUME CALCULATION

Paper: 2CR
Question: 7(c)

Question

(c) Calculate the volume, in dm^3, of hydrogen gas at rtp that is produced when 10 tonnes of methane gas completely react with steam.

[molar volume of hydrogen at rtp is 24 dm^3]

Give your answer in standard form.

(4)

Mark Scheme

7 (c) Ex	• calculate the amount, in moles, of methane • use the equation to calculate the amount of hydrogen • multiply amount by 24 to find the volume of hydrogen • final answer in standard form **M1** $\frac{10,000,000}{16}$ **OR** 625,000 **M2** 625,000 x 3 **OR** 1,875,000 **M3** 1,875,000 x 24 **OR** 45,000,000 (dm^3) **M4** 4.5×10^7 (dm^3)	Mark consequentially for **M2**, **M3** and **M4**. 45,000,000 without working scores 3 Correct answer in standard form without working scores 4 Common answers 4.5×10^4 (3) 45,000 (2) 4.5×10^1 (3) 45 (2) 1.5×10^7 (3) 15,000,000 (2) **NOTE** even if working is incorrect e.g. division by 24 instead of multiplication **M4** can still be awarded for correct conversion to standard form