

a cylinder of bottled gas contains 47 kg of propane, C₃H₈. how many propane molecules does it contain

$$n(\text{C}_3\text{H}_8) = \frac{47 \times 10^3}{44} = 1.07 \times 10^3 \text{ mol}$$

$$N = 1.07 \times 10^3 \times 6.02 \times 10^{23} = 6.4414 \times 10^{26}$$