The amount of matter in a sample: SOLUTIONS TO THE EXERCISE

ⓐ
ⓑ $x = 1 + 14 + (3 \times 16) = 63$

molecular weight → $MR = 63 \frac{u}{\text{molecule}}$

molar mass → $M = 63 \frac{g}{\text{mole}}$

ⓒ Number of moles

$$x = 120\ g\ HNO_3 \ \frac{1\ \text{mole}\ HNO_3}{63\ g\ HNO_3} = 1.9\ \text{moles}\ HNO_3$$

ⓓ Number of molecules

$$x = 1.9\ \text{moles}\ HNO_3 \ \frac{6.02 \times 10^{23}\ \text{molecules}}{1\ \text{mol}} = 1.14 \times 10^{24}\ \text{molecules}\ HNO_3$$

ⓔ Number of atoms

$$x = 1.14 \times 10^{24}\ \text{molecules}\ HNO_3 \ \frac{5\ \text{atoms}}{1\ \text{molecule}} = 5.7 \times 10^{24}\ \text{atoms}$$

ⓕ Number of oxygen atoms

$$x = 1.14 \times 10^{24}\ \text{molecules}\ HNO_3 \ \frac{3\ O\ \text{atoms}}{1\ \text{molecule}} = 3.42 \times 10^{24}\ \text{atoms O}$$

ⓖ Number of grams of nitrogen

$$x = 120\ g\ \text{sample}\ HNO_3 \ \frac{14\ g\ N}{63\ g\ HNO_3} = 26.67\ g\ N$$

$x = 1 + (14) + (3 \times 16) = (63)$

(14) → g N; (63) → g HNO_3