Q1. Trial 1

$$.034\,\text{g} \cdot \frac{1\,\text{mol}}{204.11\,\text{g}} \cdot \frac{1}{22.68\,\text{mL}} \cdot \frac{1000\,\text{mL}}{\text{L}} = 0.0073\,\frac{\text{mol}}{\text{L}}$$

Q1. Trial 2

$$.038\,\text{g} \cdot \frac{1\,\text{mol}}{204.11\,\text{g}} \cdot \frac{1}{35.41\,\text{mL}} \cdot \frac{1000\,\text{mL}}{\text{L}} = 0.0052\,\frac{\text{mol}}{\text{L}}$$

Q2. Trial 2

$$40.06\,\text{mL} \cdot \frac{1\,\text{L}}{1000\,\text{mL}} \cdot \frac{.0073\,\text{mol}}{1\,\text{mol}} = \textit{number of moles in 20 ml}$$

The number of moles in NaOH is equal to the moles in acetic acid, so:

$$\frac{\text{moles acetic acid}}{20\,\text{mL}} \cdot \frac{1000\,\text{mL}}{1\,\text{L}} = 0.015\,\frac{\text{mol}}{\text{L}}$$

Q2. Trial 2

$$20.93\,\text{mL} \cdot \frac{1\,\text{L}}{1000\,\text{mL}} \cdot \frac{.0052\,\text{mol}}{1\,\text{mol}} = \textit{number of moles in 20 ml}$$

The number of moles in NaOH is equal to the moles in acetic acid, so:

$$\frac{\text{moles acetic acid}}{20\,\text{mL}} \cdot \frac{1000\,\text{mL}}{1\,\text{L}} = 0.0054\,\frac{\text{mol}}{\text{L}}$$