## Purpose:

To investigate what happens to the vitamin $C$ in fruit juice when it is heated to $20,40,60$, and 80 degrees Celsius for 10 minutes.

## Calculations:

Part A - calculation of blank titration:
$\mathrm{V}\left(\mathrm{S}_{2} \mathrm{O}_{3}{ }^{2}{ }^{-}\right)=0.02925$
$\mathrm{n}\left(\mathrm{S}_{2} \mathrm{O}_{3}{ }^{2}{ }^{-}\right)=0.0511 \times 0.02925=1.49 \times 10^{-3}$
$n\left(l_{2}\right.$ total $)=1 / 2 \times 1.49 \times 10^{-3}=7.47 \times 10^{-4}$
Part B - calculation of back titration:
$\underline{20^{\circ} \mathrm{C}}$
$\mathrm{n}\left(\mathrm{I}_{2}\right)=7.47 \times 10^{-4}$
$\mathrm{n}\left(\mathrm{S}_{2} \mathrm{O}_{3}{ }^{2-}\right)=0.01 \times 0.0182 \mathrm{n}\left(\mathrm{S}_{2} \mathrm{O}_{3}{ }^{2-}\right)=1.82 \times 10^{-4}$
$n\left(I_{2}\right.$ remaining $)=1 / 2 \times 1.82 \times 10^{-4}=0.91 \times 10^{-4}$
$\mathrm{n}\left(\mathrm{I}_{2}\right.$ reacted with vit C$)=\mathrm{n}\left(\mathrm{I}_{2}\right.$ remaining $)=7.47 \times 10^{-4}-0.91 \times 10^{-4}=.656 \times 10^{-4} \mathrm{~mol}=$ n(vitamin C)
$c($ vitamin $C)=n / V=.656 \times 10^{-4} / 0.1=0.656 \times 10^{-3}$
Conclusion:
As the temperature is increased the volume of thiosulfate needed increases.

