# Exercise 8.3
## Variation of Equilibrium Constant with Temperature

1.

(a) The values found in the standard thermodynamic data tables at the back of most introductory chemistry textbooks can be used to calculate the equilibrium constant for a reaction at what temperature? Briefly outline how you would perform that calculation.

(b) In order to calculate the equilibrium constant at any other temperature, what additional information is required? Briefly outline how you would perform that calculation.

2. The equilibrium constant for the following reaction is 6.6×10^{-58} at 25 °C.

$$3\,O_{2(g)} \rightleftharpoons 2\,O_{3(g)}$$
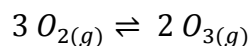
At what temperature will the equilibrium constant for this reaction be double this value?

3.   The equilibrium constant for dissolving an ionic solid in water is called the solubility product (K_{sp}) for that ionic solid. Consider the following equilibrium:

$$PbSO_{4(s)} \rightleftharpoons Pb^{2+}_{(aq)} + SO^{2-}_{4(aq)} \qquad\qquad K_{sp} = ???$$
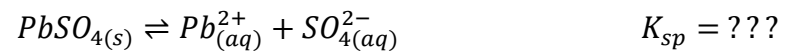
(a)   Calculate the solubility product for $PbSO_4$ at 25 °C.

(b)   Calculate the solubility product for $PbSO_4$ at 65 °C.