Aim
The purpose of this experiment is to find out how a system in equilibrium responds to a change in concentration of components in the mixture.

Introduction
Iron (III) ions and thiocyanate ions react in solution to produce thiocyanatoiron (III), a complex ion, according to the equation:

\[ \text{Fe}^{3+}(aq) + \text{SCN}^- (aq) \rightleftharpoons \text{Fe}[\text{SCN}]^{2+}(aq) \]

pale yellow colorless blood-red

The colour produced by the complex ion can indicate the position of equilibrium.

Procedure
1. Mix together one drop of 0.5 M iron(III) chloride solution and one drop of 0.5 M potassium thiocyanate solution in a test-tube and add about 10 cm$^3$ of distilled water to form a pale orange-brown solution.
2. Divide this solution into four equal parts in four test-tubes.
3. Add one drop of 0.5 M iron(III) chloride to one test-tube. Add one drop of 0.5 M potassium thiocyanate to a second.
4. Compare the colors of these solutions with the untouched samples. Enter your observations in a copy of Results Table.
5. Add a spatula-full of solid ammonium chloride to a third test-tube and stir well. Compare the color of this solution with the remaining tube and note your observation.

Results Table

<table>
<thead>
<tr>
<th>Test</th>
<th>Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Addition of iron(III) chloride</td>
<td></td>
</tr>
<tr>
<td>Addition of potassium thiocyanate</td>
<td></td>
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<tr>
<td>Addition of solid ammonium chloride</td>
<td></td>
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</tbody>
</table>

Discussion
1. How would the position of equilibrium be affected by increasing the concentration of FeSCN$^{2+}$?
2. For each imposed change show how the shift in equilibrium position conforms to Le Chatelier’s principle.