Year 12 Chemistry - Activity Sheet 1
Guided Exploration: Reaction Visualisation Tool

Organic Chemistry

Module 7 - Lesson 1

Aim

To familiarise yourself with the interactive Chord Diagram Visualisation tool and use it to identify known organic reaction pathways and their key details.

Tool Access

Use the link or application provided by your teacher to access the Chord Diagram tool on your device.

Part A: Tool Familiarisation

- Identify the main components: Outer segments (Nodes), Inner bands (Chords/Links).
- Locate the legend or checkboxes that explain the colour-coding for reaction types (e.g., Addition, Substitution, Elimination, Oxidation, Condensation).
- Practice hovering your mouse cursor over different Nodes and Chords. Observe what information appears (e.g., Functional group name, Reaction details like reagents/conditions).
- Practice using the checkboxes (if available) to filter the view and show only certain reaction types.

Part B: Guided Exploration (Complete relevant sections on Worksheet 1)

Task 1: Focus on Alkenes

1. Click on or interact with the 'Alkene' node.
2. Observe the chords connecting to it.
3. For the connection representing the reaction of an Alkene to form an Alcohol:
    - Identify the reaction type using the colour code / filter.
    - Hover to find the specific reagents/conditions (e.g., Hydration conditions). Record these on Worksheet 1.
4. Repeat for the connection representing the reaction of an Alkene to form a Haloalkane (via HX addition). Record the reaction type and typical reagent (e.g., HBr) on Worksheet 1.
5. Repeat for the connection representing the reaction of an Alkene to form a Haloalkane (via X2 addition). Record the reaction type and typical reagent (e.g., Br_2).

Task 2: Focus on Alcohols

1. Click on or interact with the 'Alcohol' node.
2. Find the chord representing the conversion of an Alcohol back to an Alkene.
    - Identify the reaction type (Dehydration/Elimination).
    - Hover to find the specific reagents/conditions. Record these on Worksheet 1.
3. Find the chord representing the conversion of an Alcohol to a Haloalkane.
    - Identify the reaction type (Substitution).
    - Hover to find the typical reagent. Record this on Worksheet 1.

Task 3: Focus on Haloalkanes

1. Click on or interact with the 'Haloalkane' node.
2. Find the chord representing the conversion of a Haloalkane to an Alcohol.
    - Identify the reaction type (Substitution).
    - Hover to find the typical reagent/conditions. Record these on Worksheet 1.
3. Does the map (based on reactions learned so far) show a direct conversion from an Alkane to a Haloalkane? Identify the reaction type and condition required.

Task 4: Synthesise (Worksheet 1, Q6) Use your findings to draw the connections between the four main functional groups studied so far (Alkanes, Alkenes, Haloalkanes, Alcohols) on Worksheet 1.