

NAME:

CLASS:

INTRODUCTION

This worksheet looks at two organic reaction pathways, and allows you to apply your knowledge of organic reactions to solve for 'unknown' compounds in these pathways.

No.	Question	Answer
1	<p>The reaction pathway shown below leads to the production of organic compound G, propyl ethanoate. Complete the diagram by drawing structural formulas for compounds A to G, and writing the systematic name for each compound in the boxes provided.</p>	
2	Describe a chemical test that could be used to distinguish between compounds A and D.	
3	Describe a chemical test that could be used to distinguish between compounds C and G.	

Organic reaction pathways

No.	Question	Answer
4	Which compound, B or F, would be expected to have the higher boiling point? Explain your choice.	

Organic compounds H and I have the same molecular formula, C_4H_8 . Compound H is reacted with $HCl(g)$ and a suitable catalyst. Two organic products, compounds J and K, are isolated. Compound J undergoes reaction with $OH^-(aq)$ to produce compound L. Compound L is oxidised to produce compound M. Compound M undergoes reaction with $Na_2CO_3(aq)$ to produce $CO_2(g)$. Compound I also reacts with $HCl(g)$ and a suitable catalyst to produce a single organic product, compound K. In another reaction, compound I undergoes addition polymerisation to form organic compound N.

No.	Question	Answer
5	What is the general name given to compounds H and I?	
6	What does the reaction of compound M with $Na_2CO_3(aq)$ suggest about compound L?	
7	Complete the diagram below by drawing structural formulas for compounds H to N, and writing the systematic name for each compound in the boxes provided.	

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graph TD
    H[H] -- "HCl/catalyst" --> J[J]
    H -- "HCl/catalyst" --> K[K]
    I[I] -- "HCl/catalyst" --> K
    I -- "high temperature and pressure" --> N[N]
    J -- "OH-(aq)" --> L[L]
    L -- "oxidant" --> M[M]
  
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