Esters: name the two building blocks

Student activity • observation and reasoning

YEAR 11 / LESSON 103 / CHEMISTRY ONLY

The question

Which part came from the alcohol and which from the acid?

Construct ester structures from alcohol/acid pairs and reverse the process. Explain uses without treating laboratory products as food or perfume.

Equipment

• Booklet, pencil, periodic table and optional molecular model kit

Desk activity only; keep small model pieces away from mouths.

Course coverage: Chemistry only: 4.38C–4.42C. Structure and naming; the practical follows in Lesson 104.

Plan, model or apparatus sketch

Draw a labelled structure or model to explain your reasoning for this lesson.

Method and reasoning

Read the whole sequence before starting

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1. Draw ethanoic acid and ethanol. Identify the acid –OH and alcohol H removed as water in the overall model.

2. Construct $CH_3C(=O)OCH_2CH_3$ and label the ester linkage –C(=O)–O–.

3. Name ethyl ethanoate; associate ethyl with the alcohol and ethanoate with the acid.

4. Build methyl propanoate from methanol and propanoic acid.

5. Reverse CH_3COOCH_3 into its named alcohol and acid.

6. Explain how volatility and distinctive odours support uses, while purity/toxicology determine suitability.

Cleanup

- Return shared equipment and retain corrected reasoning.

Record your evidence

Blank spaces are for your own work

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Reference and task data

Ester model: carboxylic acid+alcohol ⇌ ester+water, acid-catalysed. Ethyl ethanoate is $CH_3C(=O)OCH_2CH_3$. The carbonyl oxygen must remain visible in displayed structures. No samples are tasted or smelled in this paper lesson.

Task	My structure / working	Reason / correction
Ethyl ethanoate		
Second ester		
Reverse naming / uses		

Show your calculations, labelled model or correction here.

Explain and evaluate

Use evidence and show calculation steps where relevant

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1. Identify the ester linkage.

2. Name the reactants for ethyl ethanoate.

3. Give its structural formula.

4. Name $CH_3CH_2COOCH_3$.

5. Identify the reactants for methyl ethanoate.

6. Why must a classroom ester not be used as flavouring?