

## 2025 Ch H1 Q6

Section: Nature's Chemistry

Topic: Carboxylic Acids

### Question summary

Which of the given structural formulae represents 3-ethylhexanoic acid?

### Worked solution

The name '3-ethylhexanoic acid' indicates a six-carbon parent chain (hexanoic acid).

The -COOH group is always at carbon 1 by convention.

An ethyl group (-CH<sub>2</sub>CH<sub>3</sub>) is attached to carbon 3 of the main chain.

The correct structure is CH<sub>3</sub>-CH(CH<sub>2</sub>CH<sub>3</sub>)-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>2</sub>-COOH.

Therefore, the correct diagram is option C.

### Final answer

**C. 3-ethylhexanoic acid**

### Revision tips

- In carboxylic acid names, the COOH carbon is always carbon 1.
- Number the longest carbon chain that includes the COOH group.
- Attach substituents such as methyl or ethyl at the position specified in the name.