

9 The molecular formulae of four compounds are listed.

- 1 CH₄
- 2 C₂H₆
- 3 C₃H₈
- 4 C₃H₆

Which molecular formulae are also the empirical formulae for the compounds?

- A** 1 and 2 **B** 1 and 3 **C** 2 and 4 **D** 3 and 4

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11 A compound contains 40.0% carbon, 6.7% hydrogen and 53.3% oxygen only.

The relative molecular mass, M_r , of the compound is 60.

Which row shows the empirical formula and the molecular formula of the compound?

	empirical formula	molecular formula
A	CH ₂ O	CH ₂ O
B	CH ₂ O	C ₂ H ₄ O ₂
C	C ₃ H ₇ O ₃	C ₃ H ₇ O ₃
D	C ₃ H ₈ O	C ₃ H ₈ O

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9 Which compound has an empirical formula that is the same as its molecular formula?

- A** butane
B but-1-ene
C butanoic acid
D butan-1-ol

10 Which row identifies the charge on the chromium ion and on the sulfate ion in Cr₂(SO₄)₃?

	Cr	SO ₄
A	2+	3–
B	2–	3+
C	3+	2–
D	3–	2+

8 Three organic molecules are described.

- The molecular formula of propanoic acid is CH₃CH₂COOH.
- The molecular formula of lactic acid is CH₃CH(OH)COOH.
- A glucose molecule consists of 6 carbon atoms, 6 oxygen atoms and 12 hydrogen atoms only.

Which molecules have the same empirical formula?

- A** propanoic acid, lactic acid and glucose
B propanoic acid and lactic acid only
C propanoic acid and glucose only
D lactic acid and glucose only

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8 Aluminium reacts with iron(III) oxide to form aluminium oxide and iron.

Which chemical equation for the reaction between aluminium and iron(III) oxide is correct?

- A** $Al + FeO \rightarrow AlO + Fe$
B $2Al + Fe_2O \rightarrow Al_2O + 2Fe$
C $Al + Fe_2O_3 \rightarrow Al_2O_3 + Fe$
D $2Al + Fe_2O_3 \rightarrow Al_2O_3 + 2Fe$

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8 A compound is analysed and found to contain 85.7% carbon and 14.3% hydrogen only.

What is its empirical formula?

- A** CH **B** CH₂ **C** C₂H₄ **D** C₆H

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9 Which formula for the named compound is correct?

- A** calcium oxide, CaO
B cobalt(II) chloride, Co₂Cl
C sulfur dioxide, S₂O₂
D anhydrous copper(II) sulfate, Cu(SO₄)₂

11 An organic compound, Q, contains carbon, hydrogen and oxygen only.

Q contains 40.0% carbon and 6.7% hydrogen by mass.

What is the empirical formula of Q?

- A** CHO **B** CH₂O **C** C₂HO₂ **D** C₃H₆O₃