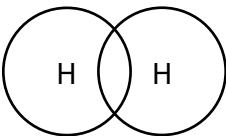
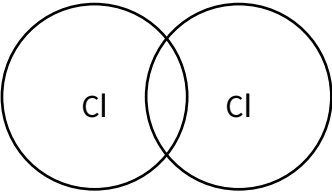
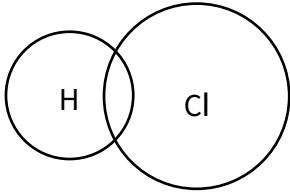
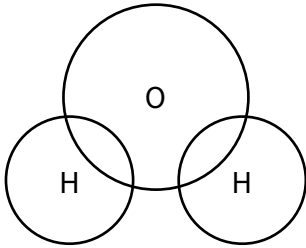
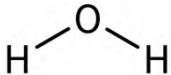
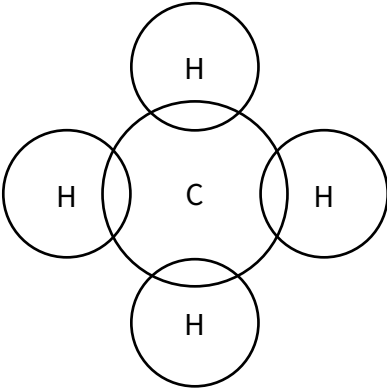


Covalent bonding: dot and cross diagrams

Your task

1. Correctly complete the diagrams in the table using dots and crosses.
2. Write in the displayed formula for each substance. Three have been done for you.

Substance	Molecular formula	Dot and cross diagram	Displayed formula
hydrogen	H ₂		
chlorine	Cl ₂		
hydrogen chloride	HCl		
water	H ₂ O		
methane	CH ₄		

Substance	Molecular formula	Dot and cross diagram	Displayed formula
ammonia	NH ₃		
oxygen	O ₂		
nitrogen	N ₂		
carbon dioxide	CO ₂		O=C=O
ethane	C ₂ H ₆		$\begin{array}{c} \text{H} & \text{H} \\ & \\ \text{H}-\text{C} & -\text{C}-\text{H} \\ & \\ \text{H} & \text{H} \end{array}$
ethene	C ₂ H ₄		

Covalent bonding: dot and cross diagrams

ANSWERS

Substance	Molecular formula	Dot and cross diagram	Displayed formula
hydrogen	H ₂		H—H
chlorine	Cl ₂		Cl—Cl
hydrogen chloride	HCl		H—Cl
water	H ₂ O		H—O—H
methane	CH ₄		$\begin{array}{c} \text{H} \\ \\ \text{H}-\text{C}-\text{H} \\ \\ \text{H} \end{array}$

Substance	Molecular formula	Dot and cross diagram	Displayed formula
ammonia	NH ₃		$\begin{array}{c} \text{H} & & \text{H} \\ & \diagdown & / \\ & \text{N} & \\ & & \\ & \text{H} & \end{array}$
oxygen	O ₂		O=O
nitrogen	N ₂		N≡N
carbon dioxide	CO ₂		O=C=O
ethane	C ₂ H ₆		$\begin{array}{c} \text{H} & & \text{H} \\ & & \\ \text{H}-\text{C} & - & \text{C}-\text{H} \\ & & \\ \text{H} & & \text{H} \end{array}$
ethene	C ₂ H ₄		$\begin{array}{c} \text{H} & & \text{H} \\ & \diagdown & / \\ & \text{C} = \text{C} & \\ & / & \diagdown \\ \text{H} & & \text{H} \end{array}$