



# Chem!stry

Name: ..... ( )

Class: .....

Date: ..... / ..... / .....

## Dot-and-Cross Diagrams to Represent the Structures of Compounds – Intermediate – Answers

Draw dot-and-cross (• and ×) diagrams to show the arrangement of the electrons, and hence the bonding, in the following compounds. There is no need to draw the inner electron shells – draw the valence electron shells only. Remember to include a key in your answer.

|                                                                                                                                                                                                                                                                     |                                                                                                                                                                  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Aluminium Chloride – Formula: <math>AlCl_3</math></b></p> $Al^{3+} \quad 3 \left[ \begin{array}{c} \bullet \bullet \\ \times \text{C} \text{I} \bullet \bullet \\ \bullet \bullet \end{array} \right]^{1-}$ <p>Key: • = electron of Cl × = electron of Al</p> | <p><b>Carbon Dioxide – Formula: <math>CO_2</math></b></p> <p>Key: • = electron of O × = electron of C</p>                                                        |
| <p><b>Calcium Nitride – Formula: <math>Ca_3N_2</math></b></p> $3 Ca^{2+} \quad 2 \left[ \begin{array}{c} \bullet \bullet \\ \times \text{N} \bullet \bullet \\ \times \bullet \end{array} \right]^{3-}$ <p>Key: • = electron of N × = electron of Ca</p>            | <p><b>Hydrazine – Formula: <math>N_2H_4</math></b></p> <p>Key: • = electron of left-hand N and right-hand H<br/>× = electron of right-hand N and left-hand H</p> |
| <p><b>Aluminium Oxide – Formula: <math>Al_2O_3</math></b></p> $2 Al^{3+} \quad 3 \left[ \begin{array}{c} \bullet \bullet \\ \times \text{O} \bullet \bullet \\ \times \bullet \end{array} \right]^{2-}$ <p>Key: • = electron of O × = electron of Al</p>            | <p><b>Hydrogen Cyanide – Formula: <math>HCN</math></b></p> <p>Key: • = electron of C × = electron of H and N</p>                                                 |