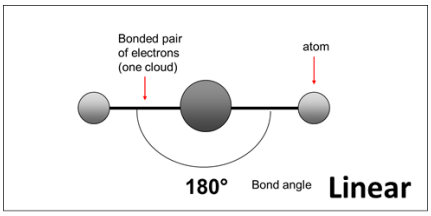
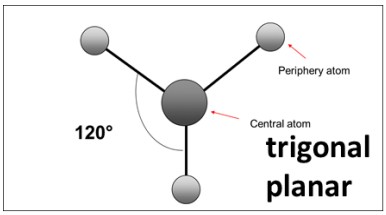
Chemistry 2.4 AS 91164 Bonding and Energy

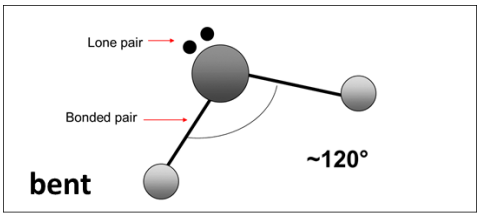
Molecular Solids – Predicting Shapes and Bond Angles

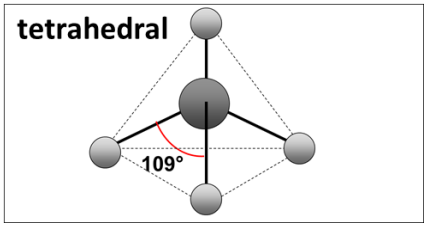
Success Criteria:

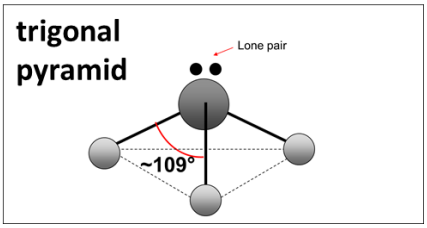
- Compare the shape and bond angles in different molecules

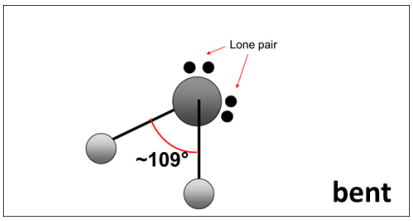












Steps to answering shape and bond angle questions – for each molecule

1. Draw a Lewis diagram of a molecule, if one is not already given in the question

2. State: [molecule] is a [linear/bent/trigonal planar/tetrahedral/trigonal pyramid] shape

3. State: There are [2/3/4] regions of electron clouds around the central [x] atom.

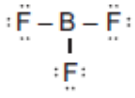
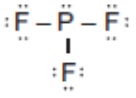
4. State: These regions repel for maximum separation into a [linear/trigonal planar/tetrahedral] shape with a bond angle of approximately [180°/120°/109°]

5. State: There are [2/3/4] bonding regions and [0/1/2] lone pairs.

6. State: Therefore, the final shape of the [molecule] is [linear/bent/trigonal planar/tetrahedral/trigonal pyramid] resulting in a bond angle of [180°/120°/109°]

Sample NCEA Style Question:

Boron and phosphorus both bond with three fluorine to form BF3 and PF3. However, the molecules have different shapes and bond angles. Explain why these molecules have different shapes and bond angles

BF_3	PF_3
	

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