I7- VSEPR- Effect of Lone Pairs Worksheet

Apply the VSEPR model to these molecules and predict the shape. Look at the structure using the refcode provided prove why they are that shape. Use the tables below as a guide to set out your answers. **Some questions include the valence electron count for you**. Measure the bond angles on the molecules and see how they compare to the ideal VSEPR model angles highlighted in the theory sheet.

1. $[AuCl_4]^-$

Refcode: *BALGUQ10*

Central Atom	
Valence Shells	
Bonded atoms	
Charge	
Total	
Electron Pairs	
Electron Pairs/ Shape	

Gold (Au) has 7 electrons in its outer shell.

2. $[SeF_5]^-$

Refcode: *YALROS*

Central Atom	
Valence Shells	
Bonded Atoms	
Charge	
Total	
Electron Pairs	
Electron Pairs/ Shape	

3. $[BiCl_4]^-$

Refcode: *FERCBI10*

Central Atom	
Valence Shells	
Bonded atoms	
Charge	
Total	
Electron Pairs	
Electron Pairs/ Shape	

4. $N(CH_3)_3$

Refcode: *CEKGUU01*

Central Atom	
Valence Shells	
Bonded Atoms	
Charge	
Total	
Electron Pairs	
Electron Pairs/ Shape	

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Edited by Steven Carman as part of an MChem project.

5. H_2O

Refcode: *ASPARM08*

Central Atom	
Valence Shells	
Bonded Atoms	
Charge	
Total	
Electron Pairs	
Electron Pairs/ Shape	

6. $[SbBr_5]^{2-}$

Refcode: *CLPYSB*

Central Atom	
Valence Shells	
Bonded Atoms	
Charge	
Total	
Electron Pairs	
Electron Pairs/ Shape	

Difficult Exercises

Use the same method as the previous questions and work out the more complicated shapes.

7. $[TeI_4(C_6H_5)]^-$

Refcode: *JASBUB*

Central Atom	
Valence Shells	
Bonded Atoms	
Charge	
Total	
Electron Pairs	
Electron Pairs/ Shape	

8. $[C(CN)_3]^-$

Refcode: *:DOMWUX*

Central Atom	
Valence Shells	
Bonded atoms	
Charge	
Total	
Electron Pairs	
Electron Pairs/ Shape	

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