

REPORT FORM:  
Molecular Models  
Lewis Dot Formula: VSEPR Theory:  
Valence Bond Theory

Name \_\_\_\_\_  
Lab Instructor \_\_\_\_\_  
Date \_\_\_\_\_

6.

\* Must draw lone pairs on center atom, but may omit other lone pairs

Electron Domain Geometry

\* Show all lone pairs

Formula	Dot Requirement	Dot Formula Lewis Structure	Electronic Geometry	Molecular Geometry	(Circle one)
NCl <sub>3</sub>	(1) N = 8 + 3(8) = 32 A = 5 + 3(7) = 26 S = 6	(2) :Cl: :Cl: N :Cl: :	(3a)	(7a)	(8a) Symmetrical Y N
	Not shared = 20		(3b) tetrahedral	(7b) Trigonal pyramidal	(8b) Polar Y N
			(4a) $\uparrow\downarrow$ 1s, 2s $\uparrow\uparrow$ 2p $\uparrow\uparrow$ 1p $\uparrow\uparrow$ 1p $\uparrow\uparrow$ 1p can omit inner e's	(4b) hybridization sp <sup>3</sup>	
HCN	(1) N = A = S =	(2)	(3a)	(7a)	(8a) Symmetrical Y N
	Not shared =		(3b)	(7b)	(8b) Polar Y N
			(4a)		(4b) hybridization
H <sub>2</sub> Se	(1) N = A = S =	(2)	(3a)	(7a)	(8a) Symmetrical Y N
	Not shared =		(3b)	(7b)	(8b) Polar Y N
			(4a)		(4b) hybridization

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Formula	Dot Requirement	Dot Formula	Electronic Geometry	Molecular Geometry	(Circle one)
CO <sub>2</sub>	(1) N = A = S =	(2)	(3a)	(7a)	(8a) Symmetrical Y N
	Not shared =		(3b)	(7b)	(8b) Polar Y N
			(4a)	(4b) hybridization	
NH <sub>3</sub>	(1) N = A = S =	(2)	(3a)	(7a)	(8a) Symmetrical Y N
	Not shared =		(3b)	(7b)	(8b) Polar Y N
			(4a)	(4b) hybridization	
NO <sub>3</sub> <sup>-</sup>	(1) N = A = S =	(2)	(3a)	(7a)	(8a) Symmetrical Y N
	Not shared =		(3b)	(7b)	(8b) Polar Y N
			(4a)	(4b) hybridization	

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8.

Formula	Dot Requirement	Dot Formula	Electronic Geometry	Molecular Geometry	(Circle one)
$\text{NH}_4^+$	(1) N = A = S =  Not shared =	(2)	(3a)	(7a)	(8a) Symmetrical Y N
			(3b)	(7b)	(8b) Polar Y N
			(4a)	(4b) hybridization	
* $\text{SF}_6$	(1) N = A = S =  Not shared =	(2)	(3a)	(7a)	(8a) Symmetrical Y N
			(3b)	(7b)	(8b) Polar Y N
			(4a)	<del>(4b) hybridization</del>	
$\text{CH}_2\text{Cl}_2$	(1) N = A = S =  Not shared =	(2)	(3a)	(7a)	(8a) Symmetrical Y N
			(3b)	(7b)	(8b) Polar Y N
			(4a)	(4b) hybridization	

\* does not follow octet rule

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9.

Formula	Dot Requirement	Dot Formula	Electronic Geometry	Molecular Geometry	(Circle one)
$\text{SCl}_2$	(1) N = A = S =  Not shared =	(2)	(3a)	(7a)	(8a) Symmetrical Y N
			(3b)	(7b)	(8b) Polar Y N
			(4a)	(4b) hybridization	
$\text{SO}_3$	(1) N = A = S =  Not shared =	(2)	(3a)	(7a)	(8a) Symmetrical Y N
			(3b)	(7b)	(8b) Polar Y N
			(4a)	(4b) hybridization	
$\text{SO}_2$	(1) N = A = S =  Not shared =	(2)	(3a)	(7a)	(8a) Symmetrical Y N
			(3b)	(7b)	(8b) Polar Y N
			(4a)	(4b) hybridization	

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10.

Formula	Dot Requirement	Dot Formula	Electronic Geometry	Molecular Geometry	(Circle one)
$H_3O^+$	(1) N = A = S =	(2)	(3a)	(7a)	(8a) Symmetrical Y N
			(3b)	(7b)	(8b) Polar Y N
	Not shared =	(2)	(3a)	(7a)	(8a) Symmetrical Y N
			(3b)	(7b)	(8b) Polar Y N
			(4a)	(4b) hybridization	
$ClO_3^-$	(1) N = A = S =	(2)	(3a)	(7a)	(8a) Symmetrical Y N
			(3b)	(7b)	(8b) Polar Y N
	Not shared =	(2)	(3a)	(7a)	(8a) Symmetrical Y N
			(3b)	(7b)	(8b) Polar Y N
			(4a)	(4b) hybridization	
* $XeCl_4$	(1) N = A = S =	(2)	(3a)	(7a)	(8a) Symmetrical Y N
			(3b)	(7b)	(8b) Polar Y N
	Not shared =	(2)	(3a)	(7a)	(8a) Symmetrical Y N
			(3b)	(7b)	(8b) Polar Y N
			(4a)	<del>(4b) hybridization</del>	

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11.

Formula	Dot Requirement	Dot Formula	Electronic Geometry	Molecular Geometry	(Circle one)
SiF <sub>4</sub>	(1) N = A = S =	(2)	(3a)	(7a)	(8a) Symmetrical Y N
	Not shared =		(3b)	(7b)	(8b) Polar Y N
			(4a)	(4b) hybridization	
NO <sub>2</sub> <sup>-</sup>	(1) N = A = S =	(2)	(3a)	(7a)	(8a) Symmetrical Y N
	Not shared =		(3b)	(7b)	(8b) Polar Y N
			(4a)	(4b) hybridization	
* BCl <sub>3</sub>	(1) N = A = S =	(2)	(3a)	(7a)	(8a) Symmetrical Y N
	Not shared =		(3b)	(7b)	(8b) Polar Y N
			(4a)	(4b) hybridization	

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12.

Formula	Dot Requirement	Dot Formula	Electronic Geometry	Molecular Geometry	(Circle one)
* $\text{PCl}_5$	(1) N = A = S =  Not shared =	(2)	(3a)   (3b)  (4a)	(7a)   (7b)	(8a) Symmetrical Y N (8b) Polar Y N <del>(4b) hybridization</del>
* $\text{BrF}_5$	(1) N = A = S =  Not shared =	(2)	(3a)   (3b)  (4a)	(7a)   (7b)	(8a) Symmetrical Y N (8b) Polar Y N <del>(4b) hybridization</del>

\* does not follow octet rule.