

Identify which has the **smaller** IE and why:

Al ( $Z = 13$ ) or P ( $Z = 15$ )

Group→	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
↓Period																		
1	1 H																	2 He
2	3 Li	4 Be										5 B	6 C	7 N	8 O	9 F	10 Ne	
3	11 Na	12 Mg										13 Al	14 Si	15 P	16 S	17 Cl	18 Ar	
4	19 K	20 Ca	21 Sc	22 Ti	23 V	24 Cr	25 Mn	26 Fe	27 Co	28 Ni	29 Cu	30 Zn	31 Ga	32 Ge	33 As	34 Se	35 Br	36 Kr

1. Al (lower  $Z_{\text{eff}}$ )
2. P (lower  $Z_{\text{eff}}$ )
3. Al (higher  $Z_{\text{eff}}$ )
4. P (higher  $Z_{\text{eff}}$ )

# Identify which has the **smaller** IE and why:

## Al (Z = 13) or P (Z = 15)

Group →	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
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73% 😊 1. Al (lower  $Z_{\text{eff}}$ )

13% 2. P (lower  $Z_{\text{eff}}$ )

4% 3. Al (higher  $Z_{\text{eff}}$ )

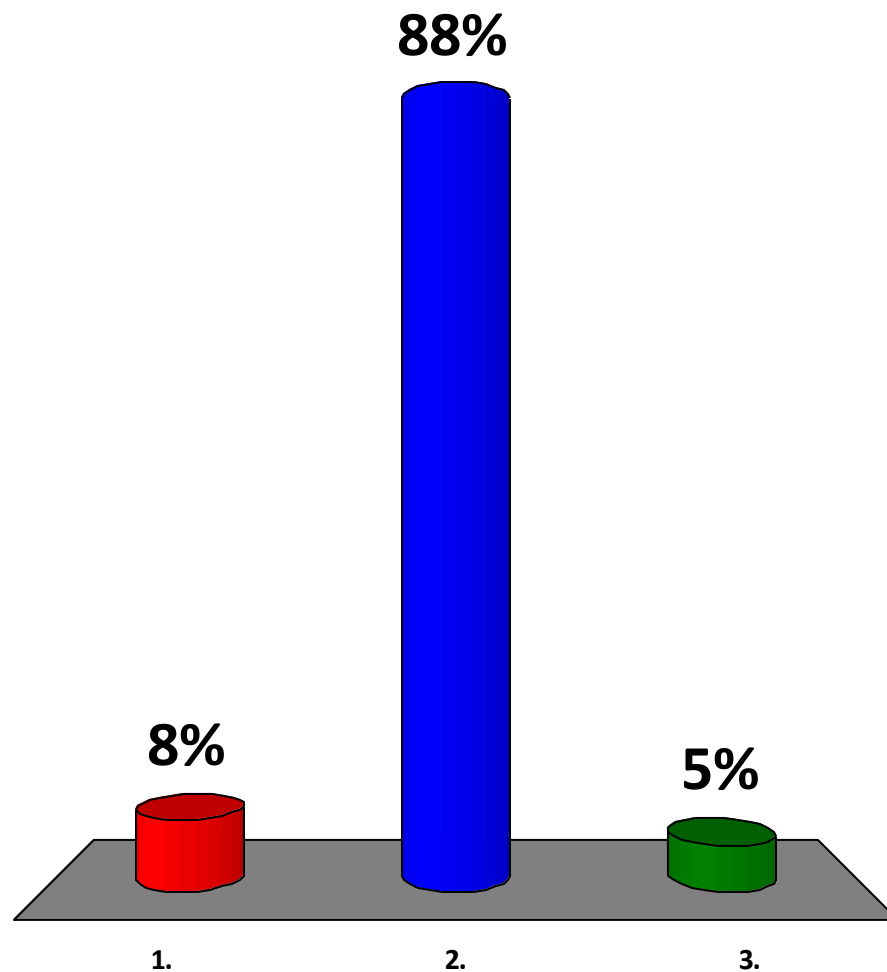
9% 4. P (higher  $Z_{\text{eff}}$ )

# Which molecule has more polar bonds?

1. Vitamin A
2. Vitamin B9
3. Same number

# Which molecule has more polar bonds?

1. Vitamin A
- ✓ 2. Vitamin B9
3. Same number



How many valence electrons does  
fluorine (F) have?

1. 1

2. 2

3. 3

4. 4

5. 5

6. 6

7. 7

8. 8

9. 9

# How many valence electrons does fluorine (F) have?

3% 1. 1

1% 2. 2

1% 3. 3

0% 4. 4

3% 5. 5

0% 6. 6

90%  7

1% 8. 8

1% 9. 9

Which atom would you expect to be in the center of the Lewis Structure of HCN?

1. H
2. C
3. N

1s											1s		
H											He		
2s-filling												2p-filling	
Li	Be							B	C	N	O	F	Ne
3s-filling												3p-filling	
Na	Mg							Al	Si	P	S	Cl	Ar
4s-filling		3d-filling										4p-filling	

# Which atom would you expect to be in the center of the Lewis Structure of HCN?

3%

1. H

87%

✓ 2. C

11%

3. N

1s	H								1s	He					
2s-filling	Li	Be							2p-filling	B	C	N	O	F	Ne
3s-filling	Na	Mg							3p-filling	Al	Si	P	S	Cl	Ar
4s-filling									3d-filling						



# FC on N

1. -3

2. -2

3. -1

4. 0

5. +1

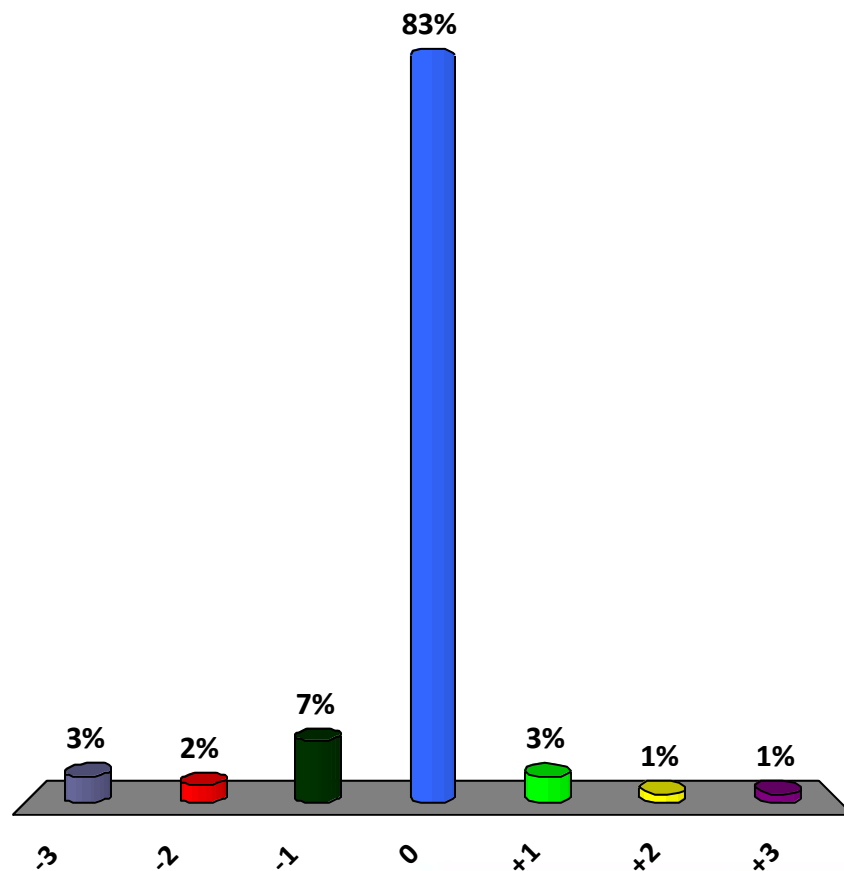
6. +2

7. +3

1s								1s
H								He
2s-filling		2p-filling						
Li	Be	B	C	N	O	F	Ne	
3s-filling		3p-filling						
Na	Mg	Al	Si	P	S	Cl	Ar	
4s-filling		4p-filling						
		3d-filling						

# FC on N

1. -3
2. -2
3. -1
- 😊 4. 0
5. +1
6. +2
7. +3



1s	
H	
2s-filling	
Li	Be
3s-filling	
Na	Mg
4s-filling	

1s					
He					
2p-filling					
B	C	N	O	F	Ne
3p-filling					
Al	Si	P	S	Cl	Ar
4p-filling					

Which Lewis structure would you predict to be most stable?

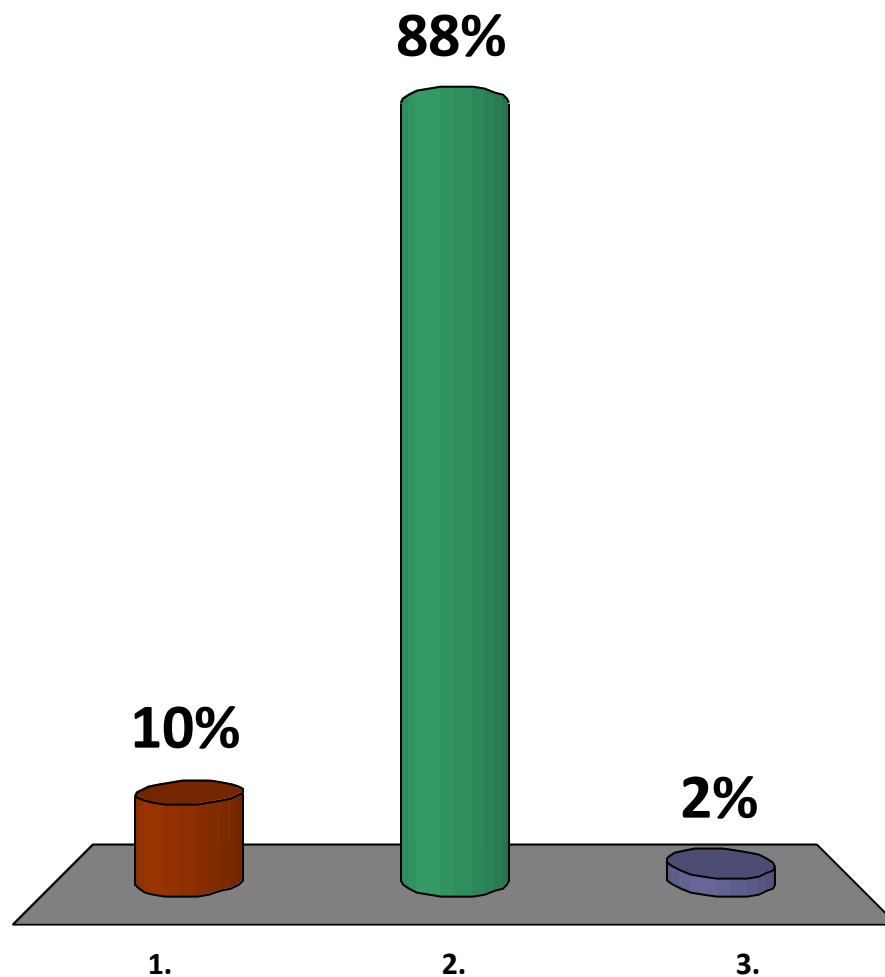
1. Structure A
2. Structure B
3. Structure C

# Which Lewis structure would you predict to be most stable?

1. Structure A

😊 2. Structure B

3. Structure C



# Which is correct?

1. Struct #1 Struct #2

$$FC_{OA} = 0 \quad FC_{OA} = 0$$

$$FC_{OB} = +1 \quad FC_{OB} = +1$$

$$FC_{OC} = -1 \quad FC_{OC} = -1$$

2. Struct #1 Struct #2

$$FC_{OA} = 0 \quad FC_{OA} = -1$$

$$FC_{OB} = +1 \quad FC_{OB} = +1$$

$$FC_{OC} = -1 \quad FC_{OC} = 0$$

3. Struct #1 Struct #2

$$FC_{OA} = -2 \quad FC_{OA} = -2$$

$$FC_{OB} = 0 \quad FC_{OB} = 0$$

$$FC_{OC} = -2 \quad FC_{OC} = -2$$

4. Struct #1 Struct #2

$$FC_{OA} = 0 \quad FC_{OA} = 1$$

$$FC_{OB} = -1 \quad FC_{OB} = -1$$

$$FC_{OC} = 1 \quad FC_{OC} = 0$$

# Which is correct?

1. Struct #1 Struct #2

$$FC_{OA} = 0 \quad FC_{OA} = 0$$

$$FC_{OB} = +1 \quad FC_{OB} = +1$$

$$FC_{OC} = -1 \quad FC_{OC} = -1$$



2. Struct #1 Struct #2

$$FC_{OA} = 0 \quad FC_{OA} = -1$$

$$FC_{OB} = +1 \quad FC_{OB} = +1$$

$$FC_{OC} = -1 \quad FC_{OC} = 0$$

3. Struct #1 Struct #2

$$FC_{OA} = -2 \quad FC_{OA} = -2$$

$$FC_{OB} = 0 \quad FC_{OB} = 0$$

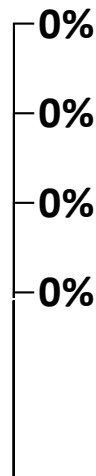
$$FC_{OC} = -2 \quad FC_{OC} = -2$$

4. Struct #1 Struct #2

$$FC_{OA} = 0 \quad FC_{OA} = 1$$

$$FC_{OB} = -1 \quad FC_{OB} = -1$$

$$FC_{OC} = 1 \quad FC_{OC} = 0$$



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