

# Assessment

## Chemistry: Lesson 12



# Question 1

How many bonding pairs of electrons are in one molecule of ammonia ( $\text{NH}_3$ )?

- A) 2
- B) 3
- C) 1
- D) 5
- E) 0

Metals

Nonmetals

Metalloids

		1A		8A														
		1	2	18														
1	H	2																
2	Li	Be	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	He
3	Na	Mg	3B	4B	5B	6B	7B	8B		10	1B	2B	13	14	15	16	17	Ar
4	K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	31	32	33	34	35	Kr
5	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
6	Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn
7	Fr	Ra	Ac	Rf	Db	Sg	Bh	Hs	Mt	Ds	Rg	Cn	113	114	115	116	117	118
Lanthanides		58	59	60	61	62	63	64	65	66	67	68	69	70	71			
Actinides		Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu			
		90	91	92	93	94	95	96	97	98	99	100	101	102	103			
Th		Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr				

\*\*Element 117 is currently under review by IUPAC.

## Question 2

How many bonding pairs of electrons are in one molecule of water ( $\text{H}_2\text{O}$ )?

- A) 0
- B) 1
- C) 2
- D) 4
- E) 6

1A 1 <b>H</b>	2A 2 <b>He</b>											Metals	8A 18 <b>He</b>				
1 <b>H</b>	2A 2 <b>He</b>											Nonmetals					
2 <b>Li</b>	3 <b>Be</b>											Metalloids					
11 <b>Na</b>	12 <b>Mg</b>	3B 3	4B 4	5B 5	6B 6	7B 7	8	8B 9	10	1B 11	2B 12	13 <b>Al</b>	14 <b>Si</b>	15 <b>P</b>	16 <b>S</b>	17 <b>Cl</b>	18 <b>Ar</b>
19 <b>K</b>	20 <b>Ca</b>	21 <b>Sc</b>	22 <b>Ti</b>	23 <b>V</b>	24 <b>Cr</b>	25 <b>Mn</b>	26 <b>Fe</b>	27 <b>Co</b>	28 <b>Ni</b>	29 <b>Cu</b>	30 <b>Zn</b>	31 <b>Ga</b>	32 <b>Ge</b>	33 <b>As</b>	34 <b>Se</b>	35 <b>Br</b>	36 <b>Kr</b>
37 <b>Rb</b>	38 <b>Sr</b>	39 <b>Y</b>	40 <b>Zr</b>	41 <b>Nb</b>	42 <b>Mo</b>	43 <b>Tc</b>	44 <b>Ru</b>	45 <b>Rh</b>	46 <b>Pd</b>	47 <b>Ag</b>	48 <b>Cd</b>	49 <b>In</b>	50 <b>Sn</b>	51 <b>Sb</b>	52 <b>Te</b>	53 <b>I</b>	54 <b>Xe</b>
55 <b>Cs</b>	56 <b>Ba</b>	57 <b>La</b>	72 <b>Hf</b>	73 <b>Ta</b>	74 <b>W</b>	75 <b>Re</b>	76 <b>Os</b>	77 <b>Ir</b>	78 <b>Pt</b>	79 <b>Au</b>	80 <b>Hg</b>	81 <b>Tl</b>	82 <b>Pb</b>	83 <b>Bi</b>	84 <b>Po</b>	85 <b>At</b>	86 <b>Rn</b>
87 <b>Fr</b>	88 <b>Ra</b>	89 <b>Ac</b>	104 <b>Rf</b>	105 <b>Db</b>	106 <b>Sg</b>	107 <b>Bh</b>	108 <b>Hs</b>	109 <b>Mt</b>	110 <b>Ds</b>	111 <b>Rg</b>	112 <b>Cn</b>	113	114 <b>Fl</b>	115	116 <b>Lv</b>	117 **	118
 Lanthanides			58 <b>Ce</b>	59 <b>Pr</b>	60 <b>Nd</b>	61 <b>Pm</b>	62 <b>Sm</b>	63 <b>Eu</b>	64 <b>Gd</b>	65 <b>Tb</b>	66 <b>Dy</b>	67 <b>Ho</b>	68 <b>Er</b>	69 <b>Tm</b>	70 <b>Yb</b>	71 <b>Lu</b>	
Actinides			90 <b>Th</b>	91 <b>Pa</b>	92 <b>U</b>	93 <b>Np</b>	94 <b>Pu</b>	95 <b>Am</b>	96 <b>Cm</b>	97 <b>Bk</b>	98 <b>Cf</b>	99 <b>Es</b>	100 <b>Fm</b>	101 <b>Md</b>	102 <b>No</b>	103 <b>Lr</b>	

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### Question 3

How many lone pairs are around the central atom in the ammonium ion?

- A) 1
- B) 4
- C) 0
- D) 16
- E) 12

Metals

Nonmetals

Metalloids

		1A		8A																																			
		1	2	18																																			
1	H	2																																					
2	3 Li	4 Be																																					
3	11 Na	12 Mg	3B 3	4B 4	5B 5	6B 6	7B 7	8B		9	10	1B 11	2B 12	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																					
5	37 Rb	38 Sr	39 Y	40 Zr	41 Nb	42 Mo	43 Tc	44 Ru	45 Rh	46 Pd	47 Ag	48 Cd	49 In	50 Sn	51 Sb	52 Te	53 I	54 Xe																					
6	55 Cs	56 Ba	57 La	72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg	81 Tl	82 Pb	83 Bi	84 Po	85 At	86 Rn																					
7	87 Fr	88 Ra	89 Ac	104 Rf	105 Db	106 Sg	107 Bh	108 Hs	109 Mt	110 Ds	111 Rg	112 Cn	113 Fl	114 Lv	115 **	116 Lv	117 **	118 **																					
Lanthanides		58 Ce	59 Pr	60 Nd	61 Pm	62 Sm	63 Eu	64 Gd	65 Tb	66 Dy	67 Ho	68 Er	69 Tm	70 Yb	71 Lu																								
Actinides		90 Th	91 Pa	92 U	93 Np	94 Pu	95 Am	96 Cm	97 Bk	98 Cf	99 Es	100 Fm	101 Md	102 No	103 Lr																								

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## Question 4

How many lone pairs of electrons are in sulfur atom in  $\text{SO}_2$ ?

- A) 2
- B) 3
- C) 1
- D) 6
- E) 0

Metals

Nonmetals

Metalloids

		1A		8A																																			
		1	2	18																																			
1	H	2																																					
2	3 Li	4 Be																																					
3	11 Na	12 Mg	3B 3	4B 4	5B 5	6B 6	7B 7	8B		10	1B 11	2B 12	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																					
5	37 Rb	38 Sr	39 Y	40 Zr	41 Nb	42 Mo	43 Tc	44 Ru	45 Rh	46 Pd	47 Ag	48 Cd	49 In	50 Sn	51 Sb	52 Te	53 I	54 Xe																					
6	55 Cs	56 Ba	57 La	72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg	81 Tl	82 Pb	83 Bi	84 Po	85 At	86 Rn																					
7	87 Fr	88 Ra	89 Ac	104 Rf	105 Db	106 Sg	107 Bh	108 Hs	109 Mt	110 Ds	111 Rg	112 Cn	113 Fl	114 Lv	115 **	116 Lv	117 **	118 **																					
Lanthanides		58 Ce	59 Pr	60 Nd	61 Pm	62 Sm	63 Eu	64 Gd	65 Tb	66 Dy	67 Ho	68 Er	69 Tm	70 Yb	71 Lu																								
Actinides		90 Th	91 Pa	92 U	93 Np	94 Pu	95 Am	96 Cm	97 Bk	98 Cf	99 Es	100 Fm	101 Md	102 No	103 Lr																								

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## Question 5

The patterns for electronegativity in the periodic table are the same as the patterns for ionization energy.

- A. True
- B. False

## Question 6

The most electronegative element is fluorine.

- A. True
- B. False

## Question 7

Which is the strongest bond?

- A. C – H
- B. C – C
- C. C = C
- D. C  $\equiv$  C

## Question 8

Long bonds are usually \_\_\_\_.

- A. Strong
- B. Weak
- C. Triple
- D. Stable

## Question 9

Which should be the shortest bond?



## Question 10

Triple bonds tend to be \_\_\_\_\_.

- A. short and weak
- B. long and weak
- C. long and strong
- D. short and strong