CONCEPT: QUANTUM NUMBERS: ANGULAR MOMENTUM QUANTUM NUMBER

● The **Angular Momentum (Azimuthal) Quantum Number** : _____ = _____ of the atom.

Relationship between *n* and *l*

● When given the principal quantum number *n*, *l* = ____ up to _____.

□ **Limitation**: The angular momentum quantum number *l* is always _____ the principal quantum number *n.*

EXAMPLE: What are all possible values for *l* when n = 4?

a) 3 b) 0, 1 c) 0, 1, 2 d) 0, 1,2, 3 e) 0, 1, 2, 3, 4

Relationship between *l* and subshell

● The shell of an atom can be further divided into subshells (sublevels), with each one assigned a variable letter.

□ The value for the angular momentum quantum number (*l*) can determine this subshell letter.

Angular Momentum Quantum Number

***l* value**	0	1	2	3
Subshell				

EXAMPLE: What are the possible values for *n* and *l* for an electron found in the 3rd principal level and d sublevel?

a) n = 2, l = 2 b) n = 3, l = 1 c) n = 3, l = 3 d) n = 3, l = 2

PRACTICE: Provide all the possible values of *l* for a 2 energy level.

a) 0 b) 0, 1 c) 0, 1, 2 d) 0, 1, 2 , 3 e) 1

PRACTICE: How many sublevels are contained in the third shell (n = 3) for a given atom?

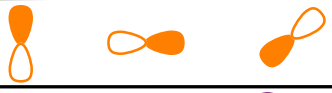
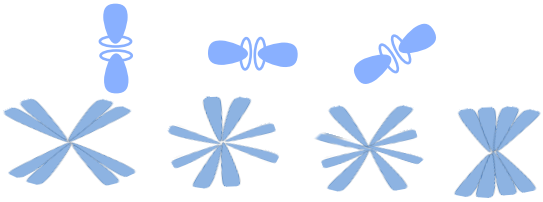
a) 1 b) 2 c) 3 d) 4 e) 5

CONCEPT: QUANTUM NUMBERS: ANGULAR MOMENTUM QUANTUM NUMBER

Relationship between subshell and orbital shape

- The Angular Momentum Quantum Number gives information on the _____ of the orbitals that electrons occupy.

Orbital Shapes

l value	Subshell	Set of Orbital Shapes
0		
1		
2		
3		

EXAMPLE: Based on the following atomic orbital shape, which of the following set of quantum numbers is correct.

a) $n = 3, l = 4$

b) $n = 1, l = 1$

c) $n = 0, l = 2$

d) $n = 2, l = 2$

e) $n = 5, l = 2$

PRACTICE: Which of the following orbitals possesses the most orbital shapes?

a) 2p b) 7s c) 4d d) 5p e) 5f