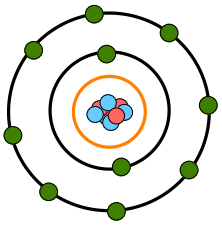
CONCEPT: QUANTUM NUMBERS: NUMBER OF ELECTRONS

Number of Electrons in Shells

- Each shell for a given atom has a maximum number of electrons it can hold.
  - □ When only the shell number (*n*) is given: Number of electrons = _____.

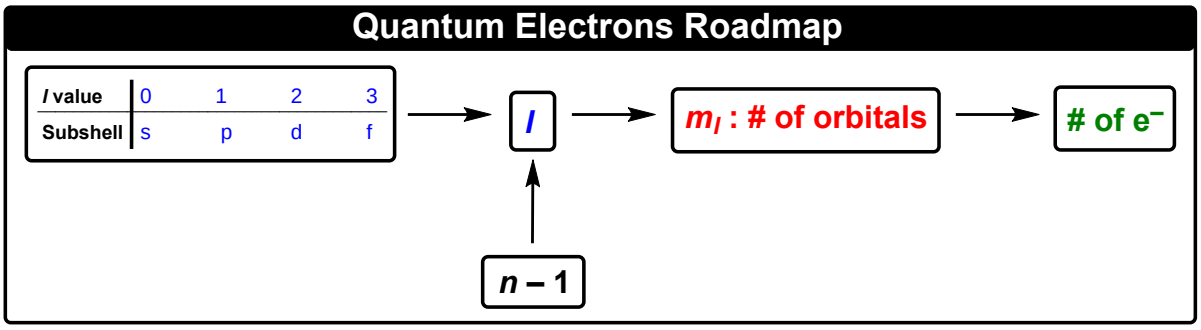


EXAMPLE: How many electrons can be found in the 7th shell of an atom?

a) 14 b) 28 c) 49 d) 98 e) 112

Number of Electrons in Subshells & Orbitals

- When more than just the quantum number *n* is included we follow the **Quantum Electrons Roadmap**.



EXAMPLE: Determine the number of electrons that can be found in the 7th shell and d sublevel.

STEP 1: Determine the value for ***l*** from either a given ***n*** value or from a subshell letter.

STEP 2: If m_l is not given, use the ***l*** value to determine the number of **orbitals**.

STEP 3: Based on the number of **orbitals**, find the **number of electrons**.

CONCEPT: QUANTUM NUMBERS: NUMBER OF ELECTRONS

PRACTICE: Determine the number of electrons that can have the following set of quantum numbers: $n = 3$, $m_l = 0$.

PRACTICE: Determine the number of electrons that can have the following set of quantum numbers: $n = 2$, $m_s = -1/2$.

PRACTICE: Determine the number of electrons that can have the following set of quantum numbers.

$$n = 4, l = 3, m_L = -1$$

PRACTICE: Determine the number of electrons that can have the following set of quantum numbers.

$$n = 4, m_L = -1, m_s = -1/2$$