Worksheet 2: Orbitals and electron configuration

**Fill in the following table.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Quantum shell | Maximum number of electrons | Types of orbitals | Total number of orbitals | Electron configuration |
| *n* = 1 |  |  |  |  |
| *n* = 2 |  |  |  |  |
| *n* = 3 |  |  |  |  |
| *n* = 4 |  |  |  |  |

**Sketch the shapes of the *s* and *p* orbitals.**

|  |  |  |  |
| --- | --- | --- | --- |
| *s* |  | *p* |  |

**Complete the following table to show the electron configuration of the elements in the first column.**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Electron configuration | | Electrons in boxes | | | | | | | | | | | | | | |
|  | *Z* | 2.8.8 | s, p, d | \_\_s | \_\_s | \_\_p | | | \_\_s | \_\_p | | | \_\_d | | | | | \_\_s |
| Na |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Be |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Be2+ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| P |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Cr |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Cu |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Fe |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Al |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Al3+ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Sc |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Cl |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Cl─ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |