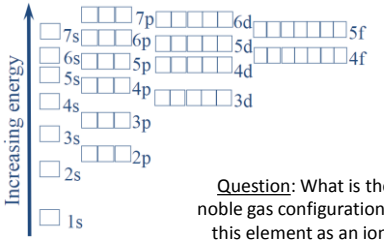
## Quantum Theory Practice

For each element:

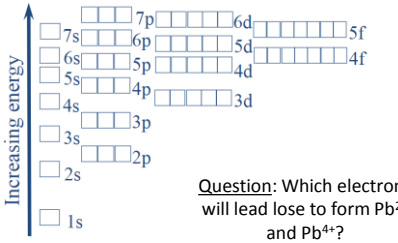
1. Write *n*, *l* and $m_l$ for the "last" electron.
2. Identify how many electrons have $m_s = +1/2$.
3. Fill in the orbital diagram.
4. Identify if the element is *paramagnetic* or *diamagnetic*.
5. Write the full electron configuration.
6. Write the noble gas configuration.
7. Answer the question for that element.

## Bromine



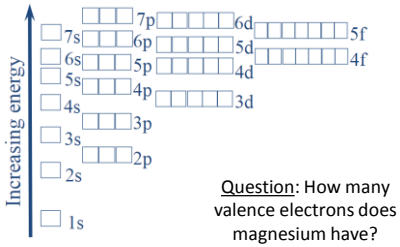

Question: What is the noble gas configuration for this element as an ion?

## Lead



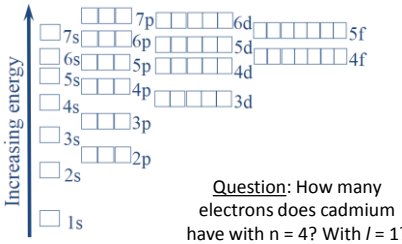

Question: Which electrons will lead lose to form $Pb^{2+}$ and $Pb^{4+}$?

## Magnesium



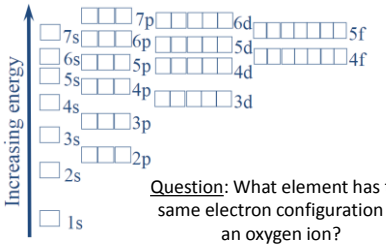

Question: How many valence electrons does magnesium have?

## Cadmium




Question: How many electrons does cadmium have with n = 4? With *l* = 1?

## Oxygen




Question: What element has the same electron configuration as an oxygen ion?