Calculate the average mass of these isotopes

- 15% 45 amu
- 10% 46 amu
- 26% 47 amu
- 14% 48 amu
- 25 % 49 amu
- 10% 50 amu

Answer

- .15 x 45 = 6.75
- .10 X 46 = 4.6
- .26 x 47 = 12.22
- .14 x 48 = 6.72
- .25 x 49 = 12.25
- .1 x 50 = 5
- Sum = 47.54

Check out this video
Each arrow is an electron
Can you see a pattern?

- http://intro.chem.okstate.edu/WorkshopFolder/Electronconfnew.html

Quantum Mechanics the easy way!!??

- Rules to represent quantum mechanics, not reality.
- Really this is just a bookkeeping procedure
- The only real way to understand is with math. Heisenberg Uncertainty Principle (p382)
- Book reference pages - Read these
  - Chapter 13 pp. 360 – 370
- Homework
  - Page 369 #'s 5 & 6
  - Page 370 #7
  - Page 409 #11, 15, 16

Rules

- 1. Aufbau principle

  Electrons enter the lowest energy orbital first

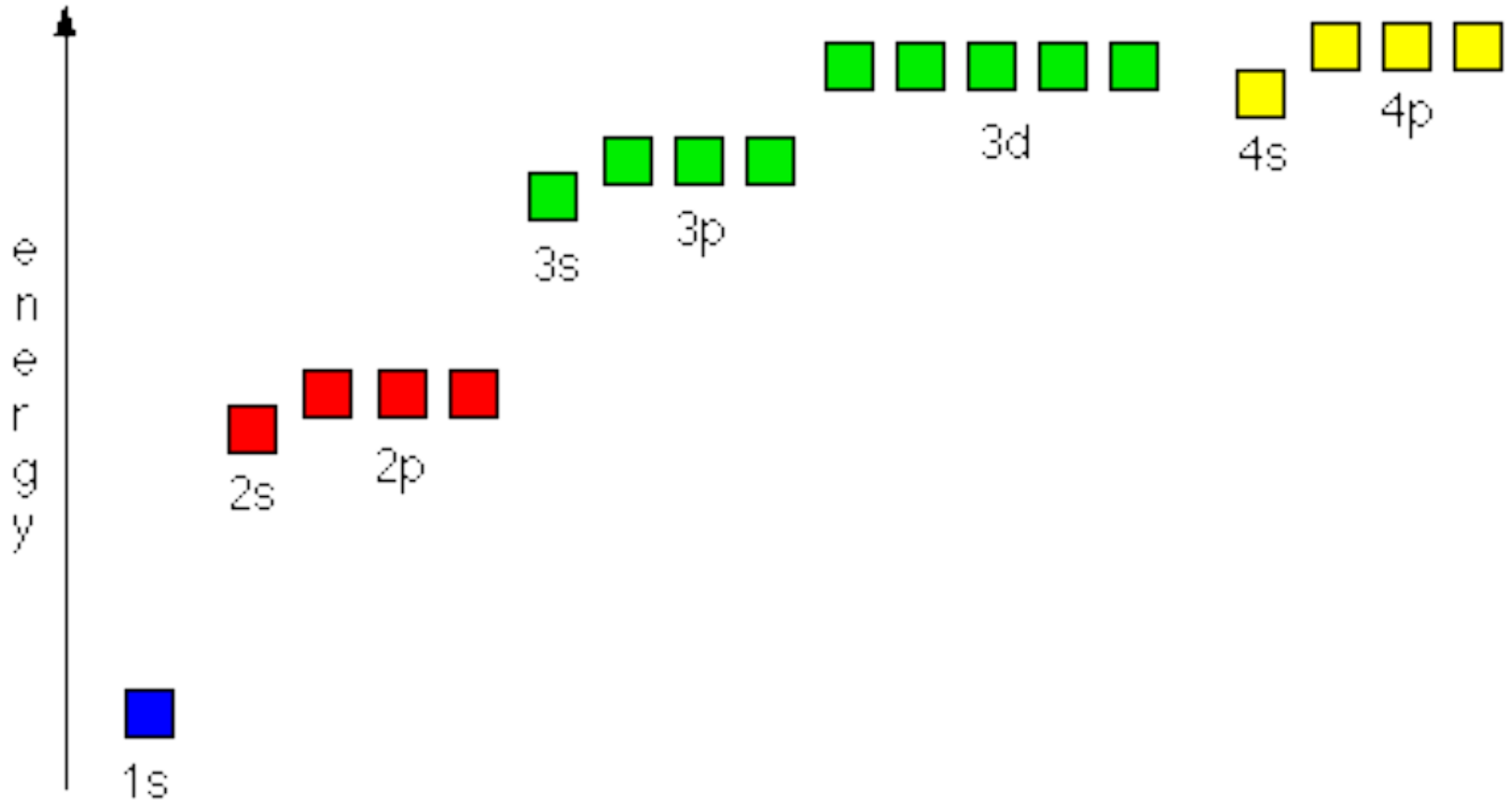
  (an orbital is a statistical region of space where electrons are likely to be found)
- 2 Pauli Exclusion Principle
  - Two electrons maximum in an individual orbital
- 3 Hunds Rule
  - Parallel spin
  - Each orbital in an energy level must have one electron before pairing them up
- 4. There are exceptions!! Always exceptions

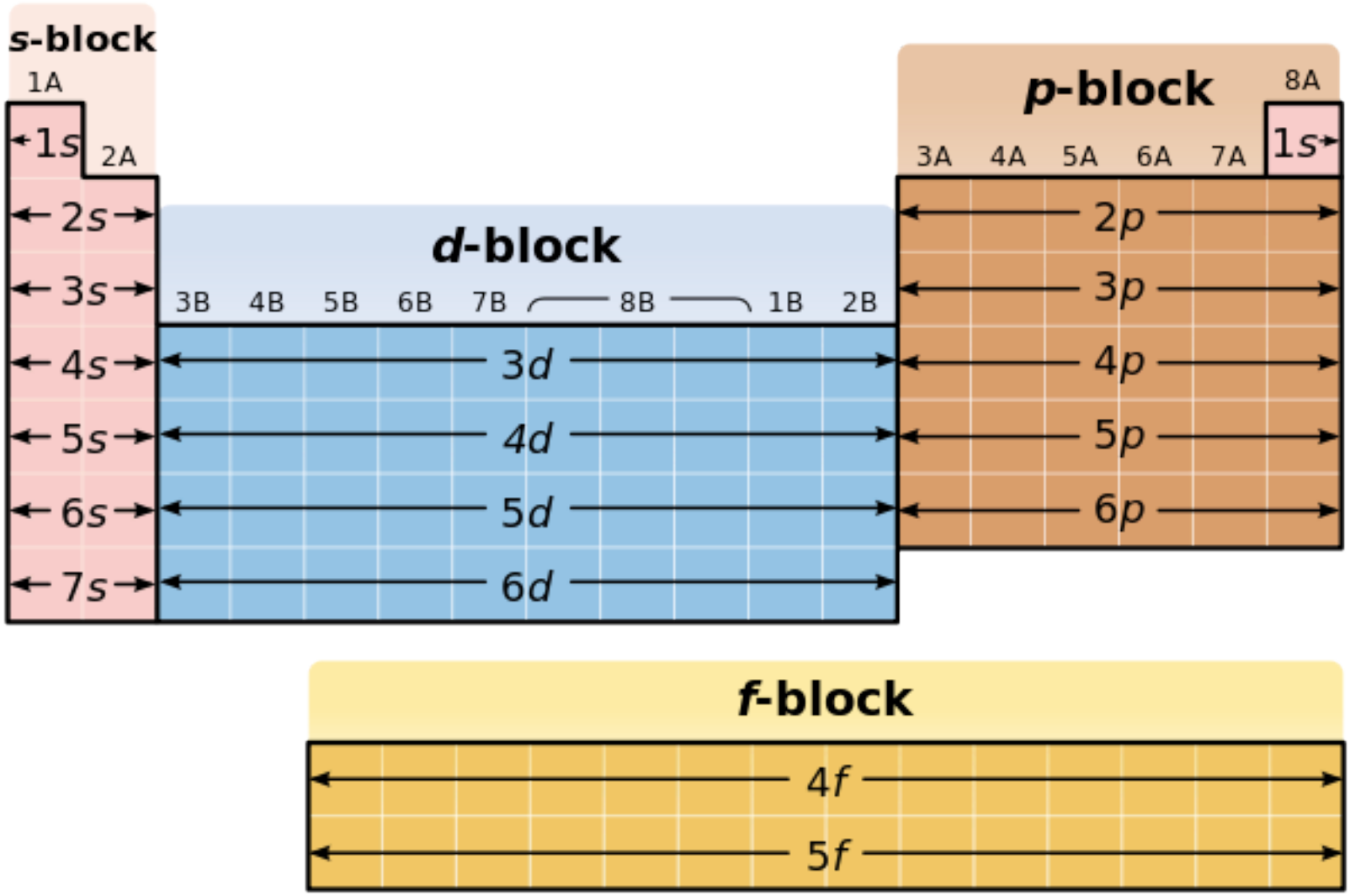
Orbitals their capacities

- s orbital 2e- maximum
- p orbitals 6e- maximum
- d orbitals 10e- maximum
- f orbitals 14 e- maximum

Energy diagram matches the periodic table

– Page 367 in your book IMPORTANT!

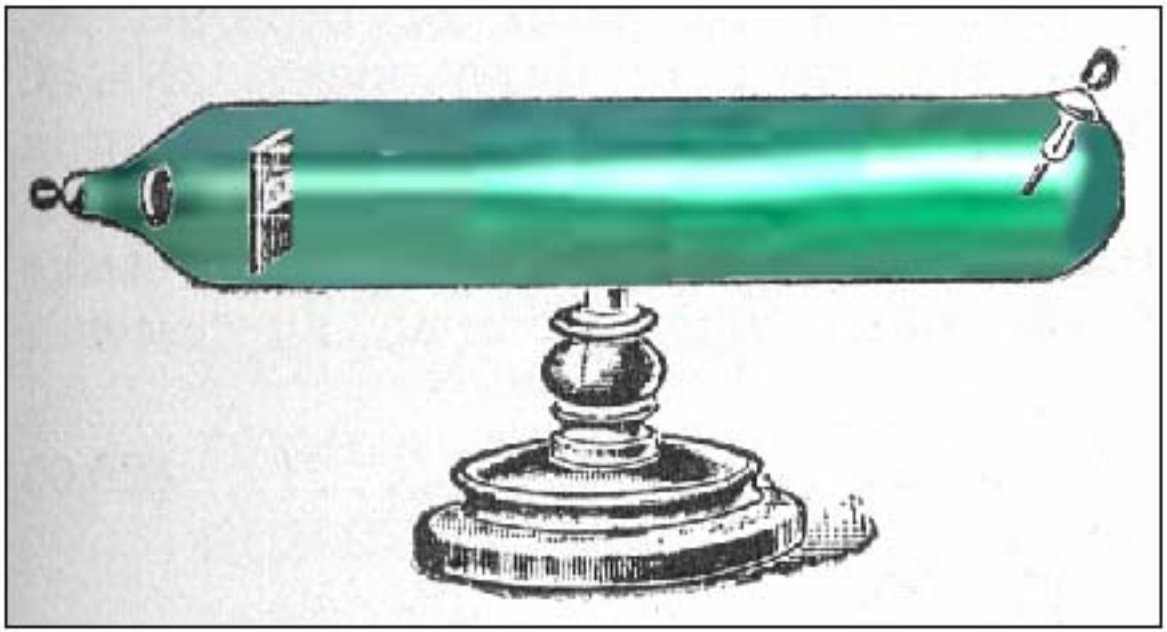



s-block
1A
1s
2A
2s
3s
4s
5s
6s
7s
d-block
3B 4B 5B 6B 7B 8B 1B 2B
3d
4d
5d
6d
p-block
8A
1s
3A 4A 5A 6A 7A
2p
3p
4p
5p
6p
f-block
4f
5f

Element	Total Electrons	Orbital Diagram	Electron Configuration
		1*s* 2*s* 2*p* 3*s*	
H	1		$1s^1$
He	2		$1s^2$
Li	3		$1s^2\,2s^1$
Be	4		$1s^2\,2s^2$
B	5		$1s^2\,2s^2\,2p^1$

JJ Thomson

Thomson Apparatus



Thomson's Result

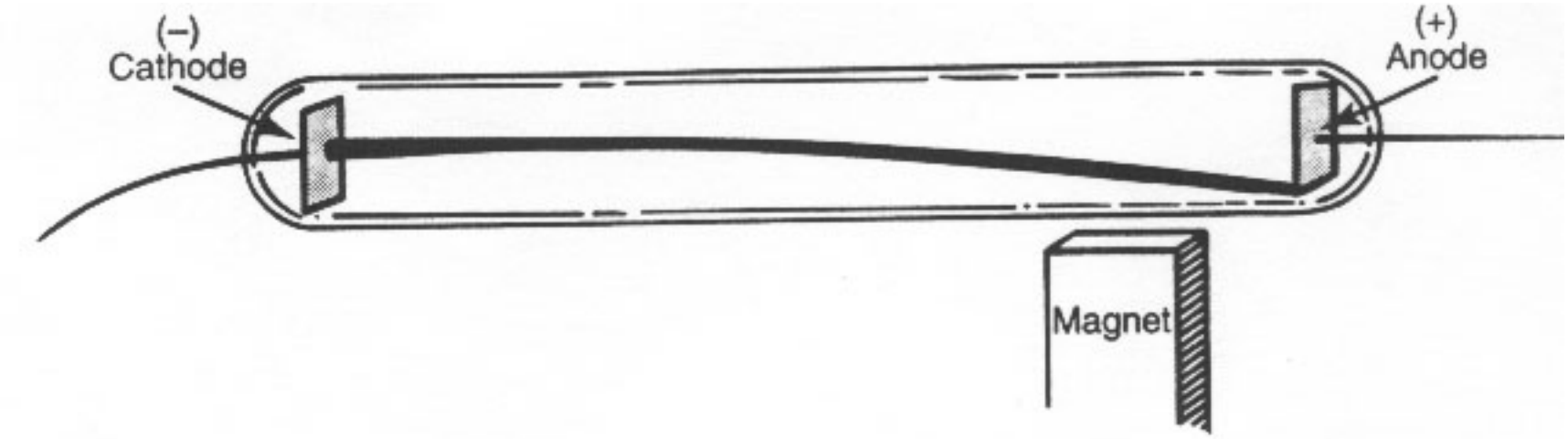


FIGURE 3. *Electron Experiment*