SUBJECT AND GRADE	PHYSICAL SCIENCES GRADE 10	
TERM 1	*WEEK 4*	
ONDERWERP	The structure of the atom	
AIM OF LESSON	Identify atomic structure, particles, charge, calculate atomic mass	
RESOURCES	***Paper resources***	***Digital resources***
	Textbook; previous question papers; terminology in this lesson.	*Youtube videos* *https://www.youtube.com/watch?v=TYEYEluTmGQ*
INTRODUCTION	What is matter? All matter consists of atoms	
CONSEPTS AND SKILLS	Know the following definitions: Atom; proton; electron; neutron; atomic mass (mass number (A)); atomic number (Z) neutral charge; negative charge; positive charge; isotope; orbital; electron configuration (aufbau diagram)	CAN YOU? Draw the labeled structure of an atom? See textbook. (labels must include: protons, electrons, nucleus, neutrons)
ACTIVITIES/ ASSESSMENT	***Write*** *the chapter heading in your notebook.* ***Write*** *the terminology in the previous column and define each* ***Make*** *yourself some flash cards by cutting an A4 page in business card size pieces. Write the terminology and the definitions front to back on these cards. (This makes learning easy)* ***Draw*** *the electron configuration of the first 20 elements. How does the structure of the elements in the same group* compare? (Two examples are completed for you as a guide)	
CONSOLIDATION	Consolidation test: The STRUCTURE OF THE ATOM ***(PLEASE READ THE INSTRUCTIONS OF THE QUESTION!!)***	

1 Fit the word in column B to the definition in column A. Write ONLY the number and the relevant letter eg. 1.5 C

1. Atoms of the same element with the same number of protons, but a different number of neutrons resulting in different atomic masses.	**A** CATION
1.2 A rule of thumb that refers to the tendency of atoms to collect eight electrons in its valence energy level in order to obtain chemical stability.	**B** ATOMIC MASS
1.3 The mass of one mole of atoms of an element.	**C** HUND'S RULE
1.4 The distribution of electrons in orbitals and energy levels.	**D** ION
1.5 Positive ion that forms when an atom or molecule loses electrons.	**E** ATOMIC NUMBER
1.6 An atom or a molecule that has a non-zero electrical charge.	**F** PAULI'S EXCLUSION PRINCIPLE
1.7 A maximum of two electrons per orbital is allowed on condition that they spin in opposite directions.	**G** RELATIVE ATOMIC MASS
1.8 Negative ion that forms when an atom or molecule gains electrons.	**H** ELECTRONCONFIGURATION
1.9 The number of protons in an atom.	**I** ISOTOPE

	1.10 No sharing of electrons may occur in p,d, or f-orbitals unless each orbital contains at least one electron.	**J** ANION
	1.11 The number of protons and neutrons in the nucleus of an atom	**K** OCTET RULE

(11)

2. Draw a labeled sketch of the structure of an atom. (5)
3. Draw the electron configuration of:

3.1 Sulfur (3)
3.2 Nitrogen (3)
3.3 Neon (3)

[25]

Link to the memo: https://drive.google.com/file/d/1PssRUrv4zbGgZ7UPGSO0SL_PIXV8zJoM/view?usp=sharing

VALUES	Research; respect; Eagerness to learn
TERMINOLOGY	**TERMINOLOGY THEME: THE ATOM** **ATOMIC NUMBER:** The number of protons in an atom. **ATOMIC MASS:** The number of protons and neutrons in the nucleus of an atom. **ISOTOPES:** Atoms of the same element with the same number of protons, but a different number of neutrons resulting in different atomic masses. **RELATIVE ATOMIC MASS:** The mass of one mole of atoms of an element. **ELECTRON CONFIGURATION:** The distribution of electrons in orbitals and energy levels.

HUND'S RULE: No sharing of electrons may occur in p,d, or f-orbitals unless each orbital contains at least one electron. ***(Please see second example!!!!)***

PAULI'S EXCLUSION PRINCIPLE: A maximum of two electrons per orbital is allowed on condition that they spin in opposite directions.

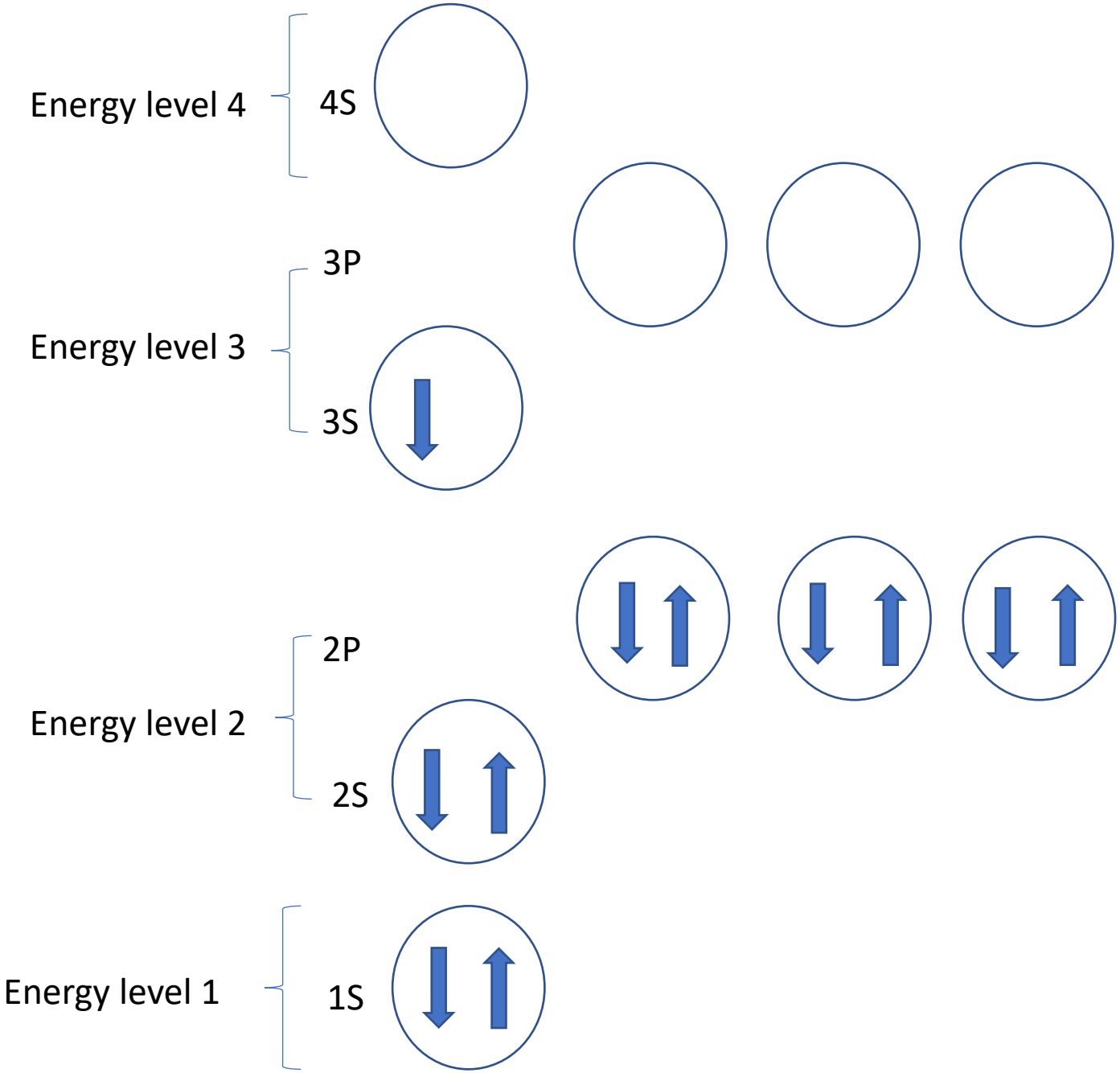
ION: An ion is an atom or molecule that has a non-zero net electrical charge.

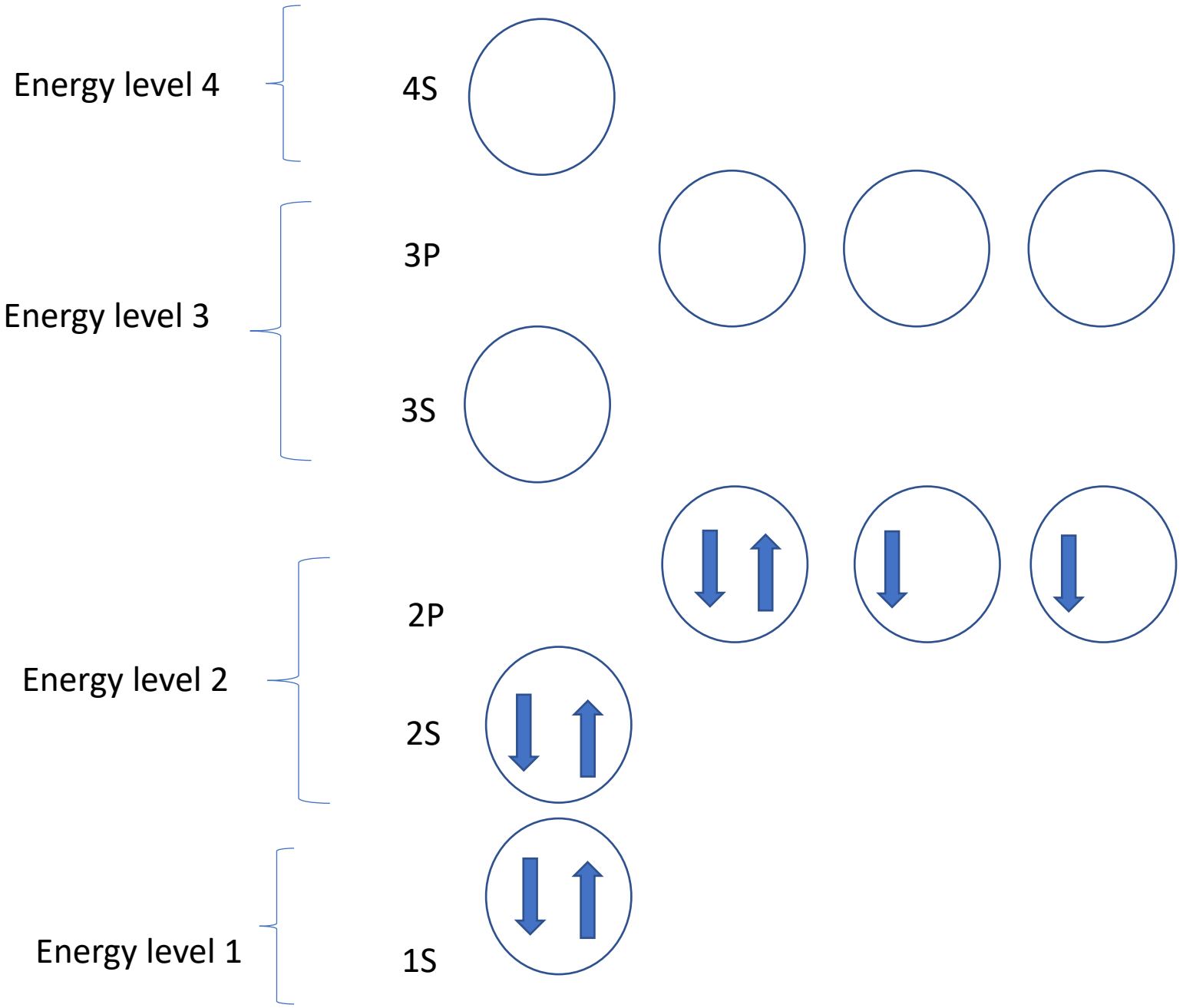
CATION: Positive ion that forms when an atom or molecule loses electrons.

ANION: Negative ion that forms when an atom or molecule gains electrons.

OCTET RULE: The tendency of atoms to collect eight electrons in its valence energy level in order to obtain chemical stability.

Electron configuration of: Sodium and oxygen respectively




Energy level 4
4S
Energy level 3
3P
3S
Energy level 2
2P
2S
Energy level 1
1S