SUBJECT AND GRADE	PHYSICAL SCIENCES GRADE 10	
TERM 1	*WEEK 6*	
ONDERWERP	Chemical bonding	
AIM OF LESSON	Two types of bonds; draw Lewis structures. Skill set: recall; compare; make predictions; observation	
RESOURCES	**Paper resources**	**Digital resources**
	Textbook; previous question papers; terminology in this lesson; periodic tabel	Youtube videos https://www.youtube.com/watch?v=Yex3u2KcqXE
INTRODUCTION	What is the difference between a chemical bond and a mixture? Can you name any examples in and around the house?	
CONSEPTS AND SKILLS	Know the following definitions: Chemical bond; covalent bond; ionic bond; molecule; metal bond; Law of constant composition.	CAN YOU? Draw the labeled structure of an atom? Draw electron configurations. Distinguish between metals and non-metals on the PT?
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) **Practice** now to find the correct number of valence electrons of an element e.g. An element's number of valence electrons are equal to its group number. i.e. (do you know this abbreviation? Language across curriculum): Mg = 2; Na = 1; O = 6; N = 5; P = 5.	

<table>
<tr><td></td><td>Try now to predict the number of valence electrons of the following:
Na; Mg; Li; Ca; Al; O; C; Cl; H.
Tabulate two differences between covalent and ionic bonds (see memo and memorize)
Draw the Lewis diagrams for the following compounds:
COVALENT: H_2; O_2; $C\ell_2$; N_2; $HC\ell$; H_2O
IONIC: $NaC\ell$; MgO; Li_2O; CaO</td></tr>
<tr><td>CONSOLIDATION</td><td>Do question 19 in The Answer Series, page Q5.</td></tr>
<tr><td>VALUES</td><td>Research; respect; Eagerness to learn</td></tr>
<tr><td>TERMINOLOGY</td><td>CHEMICAL BONDING: Chemical interaction between atoms until they are surrounded by eight electrons in the outer energy level to become chemically stable.
COVALENT BONDING: Chemical bonding between two atoms during which electron sharing takes place. The difference in electronegativity of the two atoms must be less or equal to two.
IONIC BONDING: Chemical bonding between two atoms during which electron transfer takes place. The difference in electronegativity of the two atoms must be greater than two.
MOLECULE: A molecule is an electrically neutral group of two or more atoms held together by chemical bonds. Molecules are distinguished from ions by their lack of electrical charge.
METALLIC BONDING: Strong electrostatic bond between positive ions and a sea of delocalized valence electrons moving freely around in overlapping outer energy levels.
LAW OF CONSTANT COMPOSITION: In any particular chemical substance all samples of that compound will be made up of the same elements in the same ratio.
VALENCE ELECTRONS: The number of electrons in the highest energy level.</td></tr>
<tr><td>Memo for exercises</td><td>Na = 1; Mg = 2; Li = 1; Ca = 2; Al = 3; O = 6; C = 4; Cl = 7; H = 1.

<table>
<tr><th>COVALENT BOND</th><th>IONIC BOND</th></tr>
<tr><td>Between non-metals</td><td>Between metals and non-metals</td></tr>
<tr><td>Sharing of electrons during bonding</td><td>Transfer of electrons during bonding (ions are formed)</td></tr>
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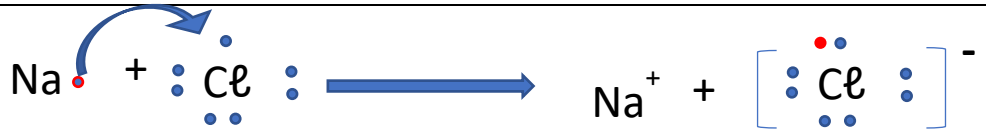
LEWIS DIAGRAMS OF ELEMENTS

Na	Cℓ	O	C	Li
N	P	Mg	K	H
Ca	Aℓ	F		

	The electron in the highest energy level is shared the two non-metals. COVALENT BOND
	The electron in the highest energy level is transferred to chlorine and creates a positive ion and a negative ion. IONIC BOND IS FORMED