KNOWLEDGE ORGANISER
BIG IDEA: REACTIONS
<b>TOPIC:</b> METALS AND NON METALS

Key word	Definition			
chemical reaction	where chemicals are changed into different chemicals			
reactant(s)	the starting chemical(s) in a reaction			
product(s)	the end chemical(s) in a reaction			
physical properties	can be observed or measured without changing the chemical			
malleable	eable easily shaped			
ductile	can be stretched into wires			
conductor	allows heat or electrical energy to pass through			
reactivity	the tendency of a substance to undergo a chemical reaction			
oxidation	when a chemical reacts with oxygen in the air			
displacement	reaction where a more reactive element takes the place of a less reactive element in a compound			

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			К	ey facts			
on	2 19 5 30 55 55 55 55 55 55		metal n, nickel at magnetic v v v v v Protection Protec	= non n nd cobalt elements be cobalt elements be cobalt result re	BA BA BA BA BA BA BA BA BA BA BA BA BA B	M N N N   C N O F N   C N O F N   C N O F N   C N O F N   C N O F N   Si P S C A   Ge As See Br K   Si S C N   B N N N   B N N N   B N N N   B N N N   B N N N   B N N N   B N N N   B N N N   B N N N   B N N N   B N N N   B N N N   N N N N   N N N N   N N N N   N N N N   N N N <	
		Physical p	roperties	of metals	and	non metals	
	property		m	metal		non-metal	
	state		solid (except mercury which is extended) a liquid)			gas or solid xcept bromine which is a liquid)	
		appearance	shiny			dull	
en						or conductors of at and electricity	
		response to force	malleable and ductile			brittle	
Metals and acids							
air		Metals react		acid		salt formed	Т
) are are	acids forming and hydroge		-	hydroch	loric	<u>metal</u> chloride	e a
		name of the	salt	sulfuric		<u>metal</u> sulfate	
oxide	•	formed depe the acid use		nitric		<u>metal</u> nitrate	
ide		<u>metal</u> + acid		→ salt + hydrogen			
		<u>lithium</u> +	hydrochlo acid		i <u>thium</u> nloride	+ hydrogen	
oxide					+ hydroger	)	

		Reactivity series				
villa <sup>2</sup> He		element	reaction with oxygen	reaction with dilute acid		
10 Ne Neon 201707		potassium				
Ar Agon Street	rgon Lises	sodium	react with oxygen in the	explode		
Kyysten 34.3796 S4 Xeren Xeren		lithium	air at room temperature			
Rn		calcium	temperature			
Og Oganesson (284)		magnesium		bubbles, give		
		aluminium		off hydrogen,		
		zinc		form a salt		
_		iron	react with			
is		tin	oxygen in the air when	slow reaction		
		lead	heated	with warm acid		
of		hydrogen				
ty		copper		no reaction		
		silver		noreaction		
	Į	gold	no reaction			
	Displacement reactions					

Oxidation reactions	Metals and acids			Displacement reactions		
Metals and non metals react with oxygen in the air	Metals react with	acid	salt formed	This is when a more reactive <u>metal</u> takes the place of a less reactive <u>metal</u> in a compound. If the less reactive <u>metal</u> is by itself, no reaction takes place.		
forming oxides. Metal oxides (eg. sodium oxide) are bases and non-metal oxides (eg. sulfur dioxide) are	acids forming salts and hydrogen. The	hydrochloric	<u>metal</u> chloride			
acids.	name of the salt formed depends on	sulfuric	<u>metal</u> sulfate	zinc + <u>lithium</u> - no reaction as <u>zinc</u> is		
Word equation: <u>element</u> + oxygen $\rightarrow$ <u>element</u> oxide	the acid used.	nitric	<u>metal</u> nitrate	chloride less reactive than <u>inthium</u>		
<b>eg</b> : <u>zinc</u> + oxygen → <u>zinc</u> oxide	<u>metal</u> + acid → salt + hydrogen			In this example <u>calcium</u> is more reactive than <u>zinc</u> so a reaction takes place – the metals 'swap'.		
Particle diagram:	<u>lithium</u> + hydrochlo acid	oric → <u>lithium</u> chloride	+ hydrogen	$\underline{zinc}$ + $\underline{copper}_{oxide}$ $\rightarrow$ $\underline{zinc}_{oxide}$ + $\underline{copper}_{opper}$		
Key Zinc particle oxygen particle zinc zinc xygen zinc oxygen	<u>lithium</u> + sulfuric a	cid → <u>lithium</u> sulfate	+ hydrogen	₩ + ₩ + ₩ + ₩ + ₩ + ₩ + ₩ + ₩ + ₩ + ₩ +		