Atomic structure and periodic table REVISION -

Elements and compounds	
1. Which particles are in the nucleus?	**Protons and neutrons**
2. Where are electrons found?	**In the shells, orbiting the nucleus**
Atoms and subatomic particles	
3. How big is an atom?	Very small, 0.1nm
4. How big is the nucleus?	1/10,000 of that of the atom
5. What is the centre of the atom called?	**Nucleus**
6. What is the mass of a proton, neutron and electron?	**Proton – 1** **Neutron – 1** **Electron – very small or 1/2000th**
7. What is the charge on a proton, neutron and electron?	**Proton +1** **Neutron 0** **Electron -1**
8. The atomic number shows the number of ….	Protons
9. The mass number shows the number of ……	Protons and neutrons
10. What is an element made up of?	**Made of only one type of atom**
11. What is a compound made up of?	**A substance made up of 2 or more elements that are chemically bonded**
12. What is a mixture made up of?	**Two or more different types of atoms not chemically joined**
13. How can you separate a compound?	By chemical reactions
14. How can you separate a mixture?	Filtration, crystallisation, simple distillation, fractional distillation, chromatography
15. How is the periodic table arranged now?	By atomic number
16. Why are elements in the same group?	The have the same number of electrons in their outer shell so have similar properties
17. Where are the metals on the periodic table?	Bottom and left
18. Do metals form positive or negative ions?	Positive
19. Where are the non- metals on the periodic table?	Top right
20. Do non-metals form positive/ negative ions?	negative
Groups	
21. What are the elements in Group 0 called?	Noble gases

22. Why are the elements in group 0 unreactive?	Full outer shell
23. What are the elements in group 7 called?	Halogens
24. What are the elements in group 1 called?	Alkali metals
25. How many outer electrons does a group 1 element have?	1
26. How many outer electrons does a group 7 element have?	7
27. What do group 1 react with?	Water, oxygen and chlorine
28. How does reactivity change down group 1?	It increases
29. How does reactivity change down group 7?	It decreases
30. How many atoms in a halogen molecule?	2 (e.g. Cl_2)
31. How does boiling point, melting point and molecular mass change down group 7?	It increases
Skills	
The mass number of Magnesium	24
The number of protons, neutrons and electrons in a Fluorine atom	9,10,9
Word equations	
Sodium + water →	Sodium hydroxide + hydrogen
Lithium + chlorine →	Lithium chloride
Potassium + oxygen →	Potassium oxide
What is the balanced symbol equation for the reaction of sodium with water?	$2Na + 2H_2O \rightarrow 2NaOH + H_2$
What is the balanced symbol equation for the reaction of potassium with oxygen?	$4K + O_2 \rightarrow 2K_2O$
Skills	
Calculate the relative atomic mass of Br. It contains 55% Br-79 and 45% Br- 81	$\frac{(55 \times 79) + (45 \times 81)}{100} = 79.9$
Calculate the relative atomic mass of Cl. It contains 33% Cl-37 and 67% Cl- 35	$\frac{(33 \times 37) + (67 \times 35)}{100} = 35.66$
Name the following: CaO, NaOH $MgCO_3$ H_2O	Calcium oxide Sodium hydroxide Magnesium carbonate Water

Chemical Bonds, Ionic, Covalent and Metallic-

Ionic Bonding	
1. What type of elements does ionic bonding occur between?	**Metal and a non-metal**
2. What sort of substance loses electrons during ionic bonding?	**metals**
3. What sort of substance gains electrons during ionic bonding?	**Non-metals**
4. What sort of ions do metals form?	**positive**
5. What sort of ions do non-metals form?	**negative**
6. Ionic compounds have a ……. structure	Giant
7. What holds ionic compounds together?	Strong electrostatic forces of attraction
Skills	
8. What is the charge on a Lithium ion?	+1
9. What is the charge on an oxygen ion?	-2
10. What is the charge on a magnesium ion?	+2
11. What is the charge on a chloride ion?	-1
12. Will sodium loose or gain an electron?	Gain
13. Will bromine loose or gain an electron?	Loose
Giant Ionic Lattice Structures	
14. Describe the melting and boiling points of giant ionic lattices	**High melting and boiling points**
15. When do ionic lattices conduct electricity?	**When molten or dissolved in water**
16. Why do giant ionic lattices have high melting and boiling points?	Large amounts of energy needed to break the many strong bonds
17. Why do ionic lattices conduct electricity when molten or dissolved in water?	The ions are free to move and so charge can flow
18. Why do ionic lattices not conduct electricity when solid?	The ions are fixed in the lattice so the charge cannot flow
Covalent Bonding	
19. What sort of elements does covalent bonding occur between?	**2 non-metals**
20. What happens to the electrons during covalent bonding?	**Electrons are shared between atoms**
21. Give 3 examples of simple molecules	H_2O,CO_2, Cl_2, I_2, H_2, NH_3, O_2,CH_4
22. Diamond, graphite and silicon dioxide all have what type of structure?	Giant Covalent
23. Give a limitation of the ball and stick model to show simple molecules	It doesn't show the shape around each

Properties of Simple Molecules	
24. Describe the melting and boiling points of simple covalent molecules	**Low melting and boiling points**
25. Do simple covalent molecules conduct electricity?	**No**
26. What state are simple molecules usually found in?	Gases or liquids
27. Which forces are overcome when a simple molecule is heated?	Weak intermolecular force between the molecules
28. Why do simple molecules not conduct electricity?	They do not have an overall electrical charge
States of Matter	
29. What does (s), (l), (g) and (aq) stand for?	**Solid, liquid, gas, aqueous**
30. What processes happen at the melting point?	Melting and freezing
31. What processes happen at the boiling point?	Boiling and condensing
32. Why do some substances have a higher melting and boiling point?	They have stronger forces between the particles
Metals and Alloys	
33. Describe the structure of a metal	**Giant structure of atoms arranged in a regular pattern**
34. What are the electrons like in the outer shell of a metal atom?	**Delocalised and free to move through the whole structure**
35. Why are alloys stronger than pure metals	**They contain different sized atoms which distort the layers so they can't slide**
36. Why can metals be bent an shaped?	Because the atoms are arranged in layers which can slide over each other
37. Why are metals good conductors of electricity and thermal energy (heat)	The delocalised electrons can carry the electric charge and they can pass on the energy

Quantitative Chemistry REVISION-

Skills	
1. Calculate the RFM of $CaCO_3$	100
2. Calculate the RFM of LiOH	24
3. Calculate the RFM of $Mg(OH)_2$	58
4. Calculate the RFM of H_2SO_4	98
10. Calculate the RFM of C_2H_6	30
11. Balance the equation: $H_2 + O_2 \rightarrow H_2O$	$2H_2 + O_2 \rightarrow 2H_2O$
12. Balance the equation: $Na + Cl_2 \rightarrow NaCl$	$2Na + Cl_2 \rightarrow 2NaCl$
13. Balance the equation: $Mg + O_2 \rightarrow MgO$	$2Mg + O_2 \rightarrow 2MgO$
14. Balance the equation: $Li + F_2 \rightarrow LiF$	$2Li + F_2 \rightarrow 2LiF$
15. Balance the equation: $Al + O_2 \rightarrow Al_2O_3$	$4Al + 3O_2 \rightarrow 2Al_2O_3$

Chemical Changes and Energy Changes REVISION-

Reactivity of Metals	
1. What ions do metal atoms form?	Positive ions
2. What is the reactivity of a metal related to?	It's tendency to form positive ions
3. What two things are formed when a metal reacts with water?	A metal hydroxide and hydrogen
4. What two things are formed when a metal reacts with an acid?	A salt and hydrogen
5. Oxidation involves ….. oxygen	Gaining
6. What do metals produce when they react with oxygen?	Metal oxides
Reactions of Acids	
7. What two things are produced when a metal oxide reacts with an acid?	Salt and water
8. What two things are produced when a metal hydroxide reacts with an acid?	Salt and water
9. What three things are produced when a metal carbonate reacts with an acid?	Salt, water and carbon dioxide
10. What salt is produced from a reaction with hydrochloric acid?	(Metal) chloride
11. What salt is produced from a reaction with sulfuric acid?	(Metal) sulfate
12. What salt is produced from a reaction with nitric acid?	(Metal) nitrate
13. What four (insoluble) things can you react with an acid to make a soluble salt?	Metals, metal oxides, metal hydroxides and metal carbonates
14. How would you remove an excess solid?	Filter it (filtration)
15. How do you obtain a solid salt from a salt solution?	Crystallisation
16. What ion makes something an acid?	H^+ (hydrogen ions)
17. What ion makes something an alkali?	OH^- (hydroxide ions)
18. What is the pH range of acidic solutions?	pH 1-6 (less than 7)
19. What is the pH range of alkaline solutions?	pH 8-14 (more than 7)
20. What is the pH of a neutral solution?	pH 7
21. What is the equation for neutralisation?	$H^+(aq) + OH^-(aq) \rightarrow H_2O(l)$
22. What do we use to measure the pH of something (which shows a colour change)?	An indicator