75	23	53	34
Re	V	I	Se
Rhenium 186.207	Vanadium 50.9415	Iodine 126.90447	Selenium 78.96

Year 10 Chemistry
Revision Checklist (Summer 2019)

Your Year 10 Chemistry examination will be 60 minutes long and will cover the Y10 topics:

1. Metals and Reactivity (booklet 1)
2. Periodic table (booklet 2)
3. Chemistry and Careers (booklet 3)
4. Atomic Structure (booklet 4)
5. Chemical World (booklet 5)

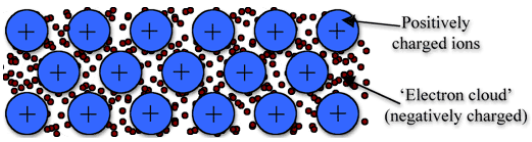
+ Tables, Graph skills, Trends (See 'pink' Managing Information booklet + question sheet)

Bring the following with you to the examination:

- 2 pens
- Pencil, rubber and sharpener
- 30 cm ruler
- Calculator may be used

Note: You are **not** permitted to take the Data Leaflet/Periodic Table into this examination.
10% of your final year assessment will be based on your Investigation; 90% from your examination paper.

1. Metals and Reactivity

Learning Outcome/Objective	Notes to help with learning/revision
1. Show the position of metals in the Periodic Table	Metals – left hand side of the 'staircase line', but remember that hydrogen is NOT a metal
2. Recall five physical properties of metals and explain how its physical properties relate to its structure.  	See page 2 for the properties and page 3 for the structure of a metal. Explanation examples: • **High melting point (solid at room temperature)** – strong metallic bond needs large amount of energy to break bond because there is a strong attraction between positive metal ions and 'sea of electrons' • **Density** – metals have a high density because the metal atoms are packed closely together and have a lot of mass (are heavy) • **Electrical conductivity** – metals conduct electricity as the mobile electrons can move and carry charge
3. Describe what is seen when calcium and magnesium are burned in air and write word equations for these reactions	See page 4 - remember the general idea that: metal + oxygen → metal oxide e.g. calcium + oxygen → calcium oxide What do you see while the reaction occurs? What colour and state (solid, liquid, gas) is the product in each reaction?
4. Explain that the difference in reactivity between metals can be studied using their reactions with water and dilute acids	See page 5 – 7 and look at the next learning outcomes (5 – 9) in detail. What do you see when the metal is cut? What do you observe when the metal is placed in water?
5. Recall observations and write word equations for the reactions of sodium, potassium and calcium with water	See pages 5 – 7 and remember the general equation is: reactive metal + water → metal hydroxide + hydrogen e.g. calcium + water → calcium hydroxide + hydrogen
6. Explain the meaning of the term 'exothermic'	Exothermic = gives out heat
7. Recall the products of the reactions between hydrochloric acid and the metals magnesium, zinc, aluminium, copper and iron.	See pages 6 – 7 and remember the general equation is: • reactive metal + hydrochloric acid → metal chloride + hydrogen e.g. zinc + hydrochloric acid → zinc chloride + hydrogen Note: **Copper** is unreactive and therefore doesn't react with dilute hydrochloric acid
8. Write word equations for these metals with hydrochloric acid, sulfuric acid and nitric acid	See page 7 and remember the general equations: • reactive metal + hydrochloric acid → metal chloride + hydrogen • reactive metal + sulfuric acid → metal sulfate + hydrogen • reactive metal + nitric acid → metal nitrate + hydrogen

Learning Outcome/Objective	Notes to help with learning/revision
9. Recall the order of metals in the reactivity series	See page 7 (You may have learned a mnemonic to help you)
10. Describe chemical reactions to show which chemicals are needed for iron to rust	See page 8 
11. Recall the word equation for rusting	See page 8
12. Suggest reasons why it is important to control rusting	Iron becomes weakened and is less fit for the intended purpose – there may be safety considerations Metal objects have to be replaced – financial cost
13. List four methods of preventing rusting and explain how they work	See page 9
14. Recall that a more reactive metal will replace a less reactive metal from a solution of its compound	This learning outcome is about **displacement reactions** See page 11
15. Place metals in order of reactivity by studying displacement reactions	See pages 12 - 13
16. Predict the products of displacement reactions	A more reactive metal displaces a less reactive metal from its salt (compound) e.g. magnesium + copper sulfate → magnesium sulfate + copper the magnesium has displaces the copper from copper sulfate
17. Write word equations for displacement reactions	See page 12
18. Recall the names of three unreactive metals and explain what they are used for	See page 15
19. List three advantages and disadvantages of using energy saving light bulbs	See pages 14 – 15 and your summary diagram on page 15

2. Periodic Table

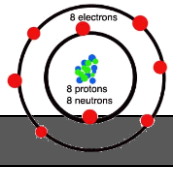
Learning Outcome/Objective	Notes to help with learning/revision
1. Explain briefly the work of Dmitri Mendeleev in developing the periodic table	See pages 2 – 3, but in particular the summary at the bottom of page 3
2. Sort periodic table data given and note exceptions to any patterns	See pages 2 – 3. You probably carried out the card sort activity in class and noticed the exceptions re iodine and tellurium, for example (see page 2)
3. Label the main areas of the periodic table to include metals, non-metals, alkali metals, halogens, transition metals, noble gases	See page 4 and your coloured version of the GCSE Data Leaflet/Periodic Table. Can you recall the two elements which are liquid at room temperature?
4. Locate an element by using the terms period and group	See page 4. Example of this type of exercise is in parts (i) and (j)
5. Know the symbols for common elements in the periodic table	See page 5. Learn these! Remember if an element has a two letter symbol the first letter is upper case and the second letter is lower case, e.g. "NA", "nA", "na" are all **wrong** – it should be "**Na**".
6. State observations when alkali metals react with water 	See page 6. This learning outcome overlaps with learning outcome 5 in the Metals & Reactivity topic (above). Fizzing, metal turns into a small ball, moving, on the surface. (Solution at end will be alkaline – if universal indicator present, colour change from green → purple)
7. Recall the colours and states of the halogens at room temperature	See page 8
8. Describe simple trends in the properties of the alkali metals	See page 7. It the general trends that are important – don't try to learn off figures and detail.
9. Recognise similarities in alkali metals' properties	See page 7. All react with water; all produce an alkaline solution; all reactive. Some of the alkali metals float in water.
10. Describe simple trends in the properties of the halogens	See page 9. It the general trends that are important – don't try to learn off figures and detail.

Learning Outcome/Objective	Notes to help with learning/revision
11. Describe simple trends in the properties of the noble gases	See page 10. The noble gases are unreactive. Inert means unreactive.
12. Predict the properties of some elements based on data within the periodic table's group	See - page 3, activity 3, question 2 - page 6, questions 6 & 7 - page 7, question 5

3. Chemistry and Careers

Learning Outcome/Objective	Notes to help with learning/revision
1. Recall what is meant by STEM subjects	Fairly easy to recall! – see page 1 of your booklet if you don't remember
2. List the skills involved in chemistry related jobs	See pages 4, 5 and 6 e.g. problem solving, working safely in practical work, report writing
3. Research some jobs related to chemistry, using a range of sources.	We will not be assessing these learning outcomes in your Y10 examination paper
4. State one company in Northern Ireland which uses chemistry in their production	
5. Identify how the skills developed through science/chemistry will be useful to a wide range of careers (Employability)	

4. Atomic Structure



Learning Outcome/Objective	Notes to help with learning/revision
1. Name the three particles making up an atom	See page 2. Take care with spelling of "n **e u** t r o n" and also "n **u** c l **e u** s"
2. State the mass, charge and location of the particles in an atom	See table 1 on page 2. Note that the mass of an electron is 1/2000 of a proton. When your asked for the charge of a proton or an electron don't forget to write the sign e.g. "+1" for the charge of a proton
3. Calculate, from given data, the number of protons, electrons and neutrons	See pages 2 – 3 ***No of protons = atomic number*** ***No of electrons = atomic number*** ***No of neutrons = mass number – atomic number***
4. Describe the structure of atoms in terms of numbers of protons, electrons and neutrons	Look at pages 4 – 5. Can you draw an atom to show the number and the location of the different particles? (electrons are in shells, protons and neutrons are in the nucleus)
5. Define the terms ***atomic number*** and ***mass number*** in terms of particles.	Definitions are on page 2 ***Atomic number = number of protons*** ***Mass number = number of protons and neutrons added together***
6. Represent elements in a shorthand way to include atomic number and mass number	You will see examples of this shorthand on page 3 of your booklet
7. Draw diagrams to represent the structure of an atom from the first twenty elements of the periodic table.	See page 5 of your booklet for examples. Practise doing this if you were given the atomic number and the mass number. Redo some of the questions from page 5 to help you revise.
8. Write the electronic configurations for an element	See examples in table 3 on page 4. Remember you should never be using the figures "0" or "9" when writing an electronic configuration.
9. Relate the electronic configuration to reactivity and position in the periodic table	This links with your Periodic Table topic. The number of electrons in the outer shell is the same as the Group number in the Periodic Table; e.g. Potassium 2.8.8.**1** so group 1, therefore a reactive metal (alkali metal)
10. State the approximate size of atoms	See page 6. Typical diameter of an atom is 10^{-10} m, or 1/10 of a nanometre. A nanometre is a billionth of a metre i.e. 1 x 10^{-9} m
11. Briefly explain what is meant by ***nanoscience*** and give one example of where nanoparticles are used.	See page 6. Nanoscience is the study of nanoparticles. [Size of nanoparticle – see above].
12. List one advantage and one disadvantage of nanoparticles	See the examples, advantages, disadvantages on page 6 of your booklet.

5. Chemical World

Learning Outcome/Objective	Notes to help with learning/revision
1. Recall the key points about the positive and negative effects of quarrying limestone	See page 2 – you should have summarised the points for and points against a quarry being extended, from your limestone debate

2. Research, manage and present information effectively within a group in a class debate	This learning outcome was covered as you prepared for your debate
3. Safely carry out the chemical reactions involved in the limestone cycle	Practical skills in the laboratory. Can you remember how you worked safely? (Heatproof mat; care with Bunsen burner; wearing goggles)
4. Explain what is meant by thermal decomposition	See page 3. thermal = heat; decomposition = breaking down
5. Describe the main chemical reactions in the limestone cycle, including observations	See Experiment 1 (pages 3 – 5). Practise writing/drawing out the three stages in the cycle. What did you see/hear in these stages?
6. State the chemical name for common salt	See page 6. You probably already know this, without looking it up! 
7. Recall three ways to obtain salt from the sea or below the ground	See pages 6 - 9
8. Explain what is meant by solar evaporation	You probably completed homework on 'the solar still' or how to get fresh water on a desert island! 
9. Explain how solution mining works	See page 6. What are the main stages? How many pipes are used? Why does this method work? (What do you know about the solubility of salt?)
10. Explain how to prepare pure salt from rock salt	See experiment 2 (pages 7 – 8). Be able to recall the four main stages, and why each is carried out.
11. Recall what is meant by desalination	See page 9. The word ***desalination*** is described there.
12. Explain how distillation is used to obtain drinking water from sea water	See page 9. Be able to label a diagram of the distillation apparatus. What are the two processes which occur inside this apparatus?
13. Use simple distillation to obtain water from copper sulfate solution	See page 10

Please leave out learning outcomes, 14-16 and also 18 from this year's summer examination revision

17. Complete word equations where some reagents and /or products are given	See examples on pages 13 and 15
18. Write word equations for different salt preparations	See pages 13 – 16 and the summary on page 19.

Don't forget about the summary on page 19 of the Chemical World booklet – this summary covers the reactions you have met in the Year 10 course, throughout the year.

Managing information (Chemistry department version)

1. Recognise and be able to classify a table of data as 'ranking', 'composition' or 'raw' data.	See chemistry version of 'Managing information sheet' page 1
2. Be able to draw, and read data from bar charts, pie charts and scatter graphs correctly.	See pages 1 – 2 and the success criteria for each graph
3. Plot a scatter graph and draw an appropriate trend line on a scatter graph.	See pages 3 – 4 and additional question sheet
4. Describe a trend on a scatter graph.	See page 4 and additional question sheet. Be able to describe a trend – see examples/questions in your file.

End of Revision Sheet