Weekly Combined Science revision countdown plan

(revision guide / workbook page numbers)

***content across both paper 1 and paper 2**

<table>
<tr><th></th><th>w/c</th><th>Revise</th><th>Practice</th></tr>
<tr><td>15</td><td>15.01.18</td><td>☐ *Key concepts in biology (1-11)
☐ Cells and Control (13-18)
☐ Genetics (20-26)</td><td>1. Draw a labelled diagram of a plant and an animal cell
2. Produce a poster to summarise enzymes. Include- examples of enzyme sin nutrition, how enzymes work including the lock and key model and denaturation
3. Draw a diagram of the stages of mitosis
4. Draw a diagram of the stages of meiosis
5. Draw a table comparing mitosis and meiosis
6. Draw a table summarising the pros and cons of stem cell use (compare both embryonic and adult stem cells)
7. Draw a diagram of DNA including the base pairs
8. · Draw a genetic diagram to show a cross between a heterozygous purple (dominate) flower (Rr) and a homozygous recessive white flower (rr)</td></tr>
<tr><td>14</td><td>22.01.18</td><td>☐ States of matter (112)
☐ Methods of separating and purifying substances (113-118)
☐ *Atomic structure(91-92)
☐ * The periodic table (93-95)</td><td>1. Draw a flow chart showing the interconversions between the 3 states of matter
2. Explain why mixtures melt over a range of temperatures but pure substances have precise melting points.
3. Draw the labelled laboratory apparatus for:
a. Filtration
b. Crystallisation
c. Chromatography
d. Distillation
e. Fractional distillation
4. Draw flow charts to describe 2 ways in which water can be made fit to drink.
5. Draw and label the structure of an atom including the mass and charge of the subatomic particles.
6. What is an isotope?
7. What were the key features of Mendeleev’s periodic table?
8. Draw the electronic configurations for lithium, magnesium and calcium.</td></tr>
<tr><td>13</td><td>29.01.18</td><td>☐ Motion (167-170)
☐ Forces and motion (172-180)
☐ Conservation of energy(182-184)</td><td>1. What are vector and scalar quantities?
2. Draw a sketch distance/time graph with annotated lines showing constant slow speed, constant fast speed, stationary object and changing speed.
3. A cheetah accelerates from rest to 30m/s in 3 seconds. Calculate the acceleration of the cheetah.
4. The data below shows some data from a train journey. Plot it as a velocity/time graph and join the points with straight lines. Label your graph with all of the things that you can tell are happening at each stage. Calculate the distance travelled.

<table><tr><th>Time (s)</th><th>Velocity (m/s)</th></tr><tr><td>0</td><td>0</td></tr><tr><td>20</td><td>10</td></tr><tr><td>30</td><td>30</td></tr><tr><td>60</td><td>30</td></tr><tr><td>120</td><td>0</td></tr></table>
5. Draw a labelled cartoon strip showing how the forces of a skydiver change on her fall.
6. A car has a mass of 1800kg. It is moving with a velocity of 35m/s. calculate the momentum of the car.</td></tr>
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12	05.02.18	☐ **Plant structures and their functions (50-56)** ☐ **Animal coordination, control and homeostasis (58-64)**	1. Label a cross section diagram of a leaf (print one from google images rather than drawing one!) 2. Write a word and balanced symbol equation for photosynthesis 3. Sketch graphs to show the limiting factors of photosynthesis 4. Draw an outline of a body and label the sites of hormone production including names of hormones and the effects they have 5. Draw a flow chart to show the effects of adrenaline 6. Label a diagram of the menstrual cycle 7. Produce a poster to summarise the hormones involved in the menstrual cycle and the effects they have 8. Produce a poster to summarise type 1 and 2 diabetes including causes and treatments
Half Term Holidays			
11	19.02.18	☐ **Exchange and transport in animals(66-74)** ☐ **Ecosystems and material cycles (76-85)**	1. Draw a levelled diagram of the alveoli 2. Draw a table comparing the blood vessels 3. Label a diagram of the heart (print one from google images rather than drawing one!) 4. Write a word and balanced symbol equation for aerobic and anaerobic respiration 5. Produce a table listing examples of biotic and abiotic factors 6. Sketch a graph to show a predator- prey cycle 7. Draw a flow chart to show the stages of eutrophication 8. Sketch the water , carbon and nitrogen cycles
10	26.02.18	☐ *** Ionic bonding(96-98)** ☐ *** Covalent bonding (99-101)** ☐ *** Types of substances(101-103)** ☐ *** Calculations involving masses (105-110)**	1. Draw a dot and cross diagram to show how ions form when sodium and chlorine atoms react 2. Make a poster summarising the properties of ionic compounds 3. Draw a dot and cross diagram to show the covalent bonds formed when carbon dioxide is formed 4. Describe the 4 allotropes of carbon including an explanation of their properties 5. Use knowledge of metallic bonding to explain the properties of metals 6. Produce a table comparing ionic, covalent and metallic bonding 7. Calculate the relative formula mass (M_r) of carbon dioxide (CO_2) 8. Calculate the mass of chlorine needed to make 53.4g of aluminium chloride

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<td>9</td>
<td>05.03.18</td>
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☐ Groups in the periodic table(143-147)
☐ Rates of reaction (149-150)
☐ Heat energy changes in chemical reactions (152-154)
☐ Fuels (155-161)
☐ Earth and atmospheric science (163-164)
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1. By referring to atomic structure, using diagrams, explain why potassium is more reactive than sodium.
2. State the properties of the halogens chlorine, bromine and iodine. Predict the state and appearance of astatine (At)
3. Explain, using diagrams, why fluorine is the most reactive halogen and astatine is the least reactive.
4. Explain some uses of the noble gases.
5. Explain 4 factors that alter the rate of a chemical reaction. Use diagrams to illustrate your explanations.
6. Draw a reaction profile that shows how a catalyst speeds up a reaction.
7. Write definitions for exothermic and endothermic reactions. Draw an energy profile for each.
8. Using the bond energies below calculate the energy change when methane burns completely in oxygen to form carbon dioxide and water ($CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$)
<table>
<tr><th>Covalent bond</th><th>Bond energy (kJ mol^{-1})</th></tr>
<tr><td>C-O</td><td>358</td></tr>
<tr><td>C-H</td><td>413</td></tr>
<tr><td>H-H</td><td>436</td></tr>
<tr><td>O-H</td><td>464</td></tr>
<tr><td>O=O</td><td>498</td></tr>
<tr><td>C=O</td><td>805</td></tr>
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<td>8</td>
<td>12.03.18</td>
<td>
☐ Energy – forces and doing work (213)
☐ Forces and their effects(215-217)
☐ Electricity and circuits (219-231)
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1. Write out the equation for work done, including units.
2. Write out the equation for power, including units.
3. List 3 contact forces and 3 non-contact forces.
4. Draw free body force diagrams to show the vertical forces on a person sitting on a chair and the forces acting on a car travelling at a constant speed.
5. Draw the following circuits;
a. Series circuit with 2 lamps
b. Series circuit with a switch and 4 lamps
c. Circuit with 2 lamps in parallel
d. Circuit containing 3 lamps, 1 in series and 2 in parallel. Include 3 switches (both open an d closed) to show how two of the lamps could be lit and one of them unlit.
6. Write a method that could be used to investigate the relationship between potential difference, current and resistance for a resistor and a filament lamp.
7. Draw labelled diagrams showing how the resistance of an LDR changes with light intensity and the resistance of a thermistor changes with temperature. Draw the circuit symbols for each component.
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<td>7</td>
<td>19.03.18</td>
<td>
☐ Magnetism and motor effect (233-235)
☐ Electromagnetic induction (237-238)
☐ Particle model (240-245)
☐ Forces and matter (247-249)
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1. Describe 2 ways in which the magnetic field around a wire can be changed.
2. What is the motor effect?
3. Draw a labelled structure of a transformer and describe the difference between a step up and a step down transformer.
4. Calculate the missing value V_P=500V, I_P=?, V_S=5V, I_S=2A
5. Draw particle diagrams for a solid, a liquid and a gas. Explain why liquids and gases can flow, but solids cannot.
6. A swimming pool contains 2500m^3 of water. The water has a density of 1000kg/m^3. Calculate the mass of water in the pool.
7. Draw a labelled diagram showing the heating curve of water, explaining each section.
8. Explain what absolute zero is using ‘kinetic energy’ and ‘absolute zero’ in your answer.
9. Draw an extension/force graph comparing a spring and a rubber band.
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6	26.03.18		Biology paper 1 extended response questions (12, 19, 28, 35, 49)
Easter Holidays Chemistry paper 1 extended response questions (119, 127, 131, 140) Physics paper 1 extended response questions (218, 232, 236, 239, 246, 250)			
5	16.04.18	☐ **Natural selection and genetic modification (29-34)** ☐ **Health, disease and development of medicines (36-48)**	1. Draw a flow chart to show the steps in genetic engineering of a bacterium 2. Draw a flow chart to show how smoking leads to CVD 3. Draw a summary table including: type of pathogen (e.g. virus), example of disease, symptoms, ways spread can be reduced and treatments 4. Draw an outline of a body and label how the body protects against pathogens 5. Draw a flow chart to show the body's internal responses to pathogens
4	23.04.18	☐ **Acids and alkalis (120-126)** ☐ **Electrolytic processes (128-120)** ☐ **Obtaining and using metals (132-139)** ☐ **Reversible reactions and equilibria(141-142)**	1. Produce a table listing 3 common acids and 3 common alkalis including their formula 2. Write the general equation for neutralisation reactions with metal oxides 3. Write the general equation for when an alkali is added to a base 4. Draw a flowchart to explain the steps in preparing a soluble salt from an insoluble base 5. Describe how titration is used to prepare soluble salts 6. Write the general equation for when a metal and an acid react 7. Write the general equation for when a metal carbonate reacts with an acid 8. Draw a labelled diagram to show what happens in electrolysis of sodium chloride 9. Compare and contrast biological and non-biological methods of extraction 10. Write a definition and give an example for oxidation and reduction 11. Label a fractional distillation column 12. Draw the structural formula for the alkanes methane, ethane and propane 13. Write the word and symbol equations for complete and incomplete combustion 14. Draw a diagram to show how you would use cracking to break down paraffin in the lab. 15. Produce a table comparing petrol and hydrogen as fuels 16. Write a definition for a hydrocarbon, alkane and alkene 17. Produce a poster to summarise how the earth's early atmosphere formed and changed over time 18. Draw a diagram to explain global warming and the greenhouse effect
3	30.04.18	☐ **Waves (188-192)** ☐ **Light and the electromagnetic spectrum (194-198)** ☐ **Radioactivity (200-211)**	1. Draw one full transverse wave. Define the frequency, period, wavelength, amplitude and velocity by annotating and labelling your sketch. 2. A ray of light shines through a thick piece of glass. Explain, using a diagram, why the light ray emerges from the glass travelling in the same direction as originally, but not along the same line. 3. Sketch the electromagnetic spectrum, listing the seven parts in order. For each list their uses and dangers. 4. Using diagrams, compare and contrast Rutherford's model of the atom with the plum pudding model.
2	07.05.18		Biology paper 2 extended response questions (57, 65, 75, 86) Chemistry paper 2 extended response questions (148, 1623, 165)

1	14.05.18		Physics paper 2 extended response questions (214, 218, 232, 236, 239, 246, 250) Learn physics equations list (269)
Biology Paper 1 15.05.18			
Chemistry Paper 1 17.05.18			
Physics Paper 1 23.05.18			
Biology Paper 2 11.06.18			
Chemistry Paper 2 13.06.18			
Physics Paper 2 15.06.18			