A Level Chemistry

Summer Work 2026-2027

Sandringham School

Everybody can be Somebody

Summer Work

1 Using this booklet

Watch	Using the QR code or link, watch the video and make detailed notes
Create	Create a resource e.g. flash cards or a mind map
Practice	Complete the attached practice questions
Review	Mark your practice questions using the mark scheme at the back of the booklet
Check	Follow the link to an online quiz, be honest with your scores!

2 Summer to do list

Purchase appropriate laptop		✓
Purchase lever arch folder and dividers e.g. https://www.ryman.co.uk/office-supplies/filing-folders/lever-arch-files		
Purchase lab coat e.g. https://shop.wearwell.co.uk/products/white-doctors-coat?variant=31770393870451		
Purchase practical revision guide (optional) https://www.hachettelearning.com/chemistry/aqa-a-level-chemistry-student-guide-practical-chemistry		
Download/print specification https://filestore.aqa.org.uk/resources/chemistry/specifications/AQA-7404-7405-SP-2015.PDF		

iii *Engage in wider reading*

University of Cambridge Chemistry Department youtube page

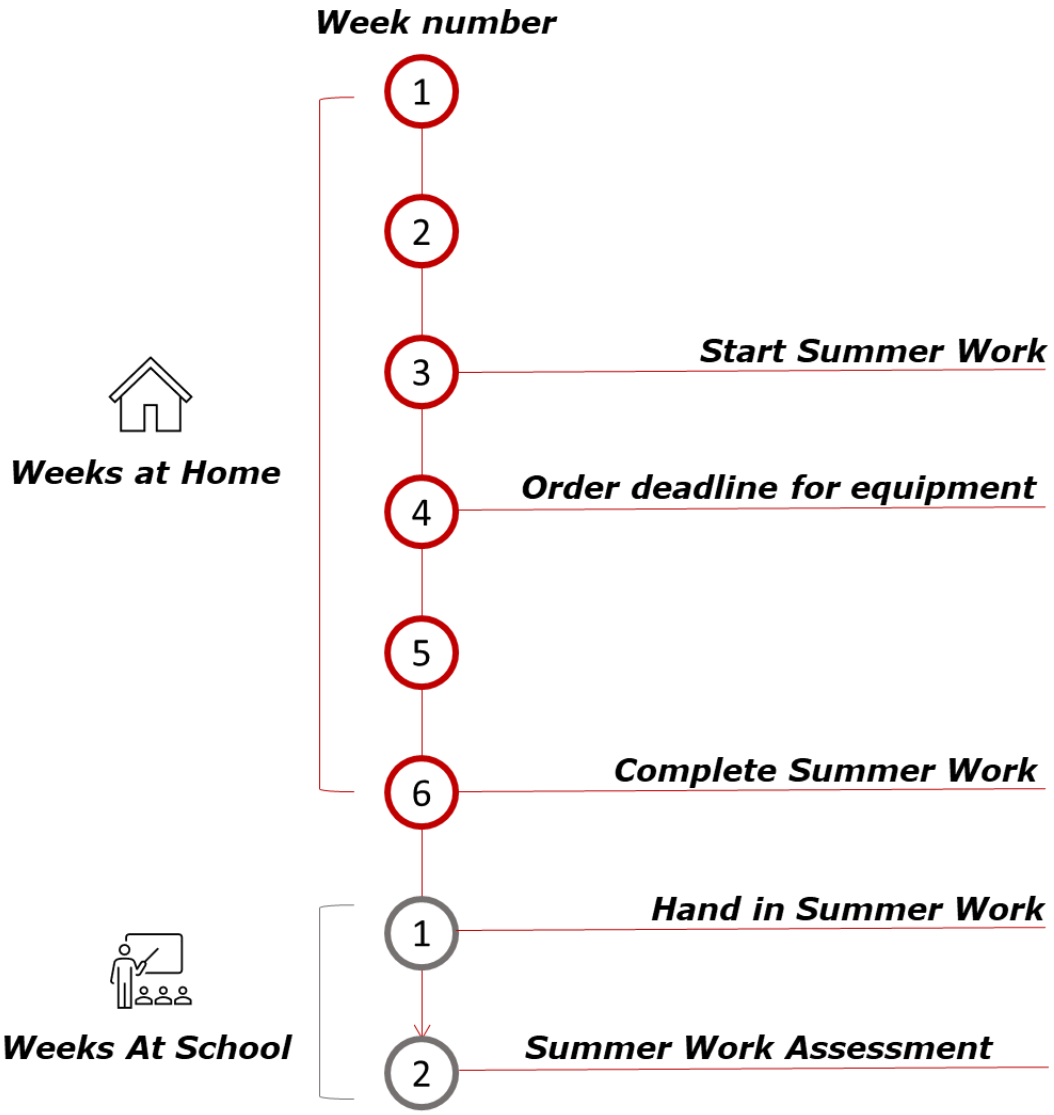
University of Oxford Chemistry Department youtube page

A Day in the life of an undergraduate chemistry student

TED Talks on Chemistry

Articles on chemistry

iv *Recommended Summer plan*



v *What to bring on the first day*

- Folder with dividers
- Laptop (specification downloaded)
- Lab coat
- Completed summer work
- Writing equipment (paper and pens)
- Other revision materials

vi *FAQs*

I studied combined chemistry at GCSE, how can I start A level as strongly as possible?

Most of this summer work is aimed at ensuring that everybody has the correct foundational knowledge in September. The main differences between triple and combined chemistry are found in quantitative chemistry or organic chemistry, so try to learn those triple modules before arriving in September.

I want to become a medic or vet, what do I need to do to increase my chances of this?

Firstly, for many of these courses you are required to get an A or A* in Chemistry, so ensuring you come with a strong chemical background is very important. Once you have done this, you should pursue further reading and work experience opportunities as soon as possible and discuss future plans with the school careers guidance team.

I am having trouble accessing part of my summer work, what can I do?

Make sure you are logged in to correct accounts, everything on here should be doable for you even on personal email accounts. If you can't get all of the work done, we can fix these problems/gaps in September.

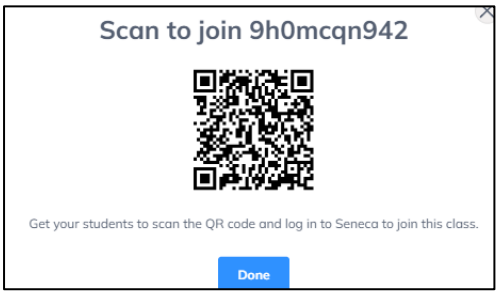
Chemical Bonding

Watch

https://www.youtube.com/watch?v=YpEQ-NWxKBc

Practice

Sign up to Seneca and complete the assignment 'SUMMER WORK – bonding'



Create

Download the revision booklet, review it and make your own notes and flashcards

https://chemrevise.files.wordpress.com/2021/02/4.2-bonding-and-structure.pdf

Review

Get a blank piece of A4 paper and write out everything you can remember about bonding on to it. Then use your revision resources to fill in the things you forgot!

Check

Log on to the Quiz below and attempt the questions

https://gradegorilla.com/chemistry/micro/principles/M_bonding.php

Score: / 10

Organic Chemistry

Watch

https://www.youtube.com/watch?v=ZeUNWY7YDAo

Practice

On the same Seneca classroom as the previous page, complete the assignment 'SUMMER WORK – Organic Chemistry'

Create

Download the revision booklet, review it and make your own notes and flashcards

https://chemrevise.files.wordpress.com/2021/02/4.7-organic-chemistry.pdf

★★☆

Review

Download the question papers for 7.1, 7.2 and 7.3 from Physics and Maths tutor. Complete them and then mark them!

https://www.physicsandmathstutor.com/chemistry-revision/gcse-aqa/organic-chemistry/

Ionic Formulae

1 Polyatomic Ions

Watch

https://www.youtube.com/watch?v=gTvwmlH7zLk

Create

Create a flashcard for each polyatomic ion in the table below including name, formula and charge. Make sure you review these regularly

Common Polyatomic Ions			
Ion	Name	Ion	Name
NH_4^+	Ammonium	CO_3^{2-}	Carbonate
NO_2^-	Nitrite	HCO_3^-	Hydrogen carbonate Or Bicarbonate
NO_3^-	Nitrate	ClO^-	Hypochlorite
SO_3^{2-}	Sulfite	ClO_2^-	Chlorite
SO_4^{2-}	Sulfate	ClO_3^-	Chlorate
HSO_4^-	Hydrogen sulfate Or Bisulfate	ClO_4^-	Perchlorate
OH^-	Hydroxide	$C_2H_3O_2^-$	Acetate
CN^-	Cyanide	MnO_4^-	Permanganate
PO_4^{3-}	Phosphate	$Cr_2O_7^{2-}$	Dichromate
HPO_4^{2-}	Hydrogen phosphate	CrO_4^{2-}	Chromate
$H_2PO_4^{2-}$	Dihydrogen phosphate	O_2^{2-}	Peroxide

2 Determining Ionic Formulae

Watch

https://youtu.be/ct_7qhxh6JE

https://www.youtube.com/watch?v=iQEGrX5Ud6g

Practice

1

a) sodium iodide .....
b) potassium oxide .....
c) aluminium chloride .....
d) magnesium bromide .....
e) aluminium oxide .....
f) iron(II) oxide .....
g) iron(III) oxide .....
h) magnesium sulfide .....
i) copper(II) fluoride .....
j) lithium iodide .....
k) barium bromide .....
l) zinc(II) sulfide .....
m) lead(II) iodide .....
n) iron(III) sulfide .....
o) magnesium oxide .....
p) rubidium bromide .....
q) strontium chloride .....
r) caesium selenide .....
s) calcium astatide .....
t) radium polonide .....
u) gallium fluoride .....
v) scandium(III) bromide .....
w) chromium(III) oxide .....
x) strontium iodide .....
y) lithium arsenide .....

2

a) sodium sulfate .....
b) calcium sulfate .....
c) magnesium hydroxide .....
d) zinc(II) nitrate .....
e) copper(II) carbonate .....
f) sodium hydroxide .....
g) potassium carbonate .....
h) iron(III) hydroxide .....
i) ammonium nitrate .....
j) ammonium hydroxide .....
k) iron(III) sulfate .....
l) aluminium nitrate .....
m) silver(I) nitrate .....
n) calcium carbonate .....
o) magnesium nitrate .....
p) ammonium astatide .....
q) caesium nitrate .....
r) strontium hydroxide .....
s) platinum(II) nitrate .....
t) cobalt(II) carbonate .....
u) copper(I) oxide .....
v) copper(II) oxide .....
w) francium telluride .....
x) gold(I) fluoride .....
y) rubidium sulfate .....

★★☆

Review

Turn to the back of the booklet and mark your answers on the previous page

Score: / 50

Check

Log on to the Quizlet below and attempt the questions

https://quizlet.com/207566438/ionic-formula-flash-cards/

Score: / 56

Balancing Equations

Watch

https://www.youtube.com/watch?v=jy6F0Lbvjm8

https://www.youtube.com/watch?v=qquOFYOpdl0

Practice

1) $Na + H_2O \rightarrow NaOH + H_2$

2) $KOH + H_2SO_4 \rightarrow K_2SO_4 + H_2O$

3) $Mg(NO_3)_2 + NaOH \rightarrow Mg(OH)_2 + NaNO_3$

4) $NO + H_2O + O_2 \rightarrow HNO_3$

5) $C_5H_{12} + O_2 \rightarrow CO_2 + H_2O$

6) $Br_2 + NaI \rightarrow NaBr + I_2$

7) $K_2CO_3 + HNO_3 \rightarrow KNO_3 + CO_2 + H_2O$

8) $NaHCO_3 \rightarrow Na_2CO_3 + H_2O + CO_2$

9) $ZnCO_3 \rightarrow ZnO + CO_2$

★★☆

Review

Turn to the back of the booklet and mark your answers on the previous page

Score: / 9

Check

Log on to the quiz below and attempt the questions

https://www.educationquizzes.com/gcse/chemistry/balancing-symbol-equations-h/

Score: / 10

Quantitative Chemistry

Watch

https://www.youtube.com/watch?v=eAibVvhmsK0

Practice

Using Seneca, complete the assignment 'SUMMER WORK – Quant Chem'

Create

Download the revision booklet, review it and make your own notes

https://chemrevise.files.wordpress.com/2023/05/4.3-quantitative-chemistry.pdf

★★☆

Review

Get a blank piece of A4 paper and write out everything you can remember about bonding on to it. Then use your revision resources to fill in the things you forgot!

1 Calculating Formula Mass

Watch

https://www.youtube.com/watch?v=it_fMQu5ivg

Practice

1 F_2

2 Fe

3 H_2SO_4

4 Al_2O_3

5 $Mg(OH)_2$

6 $Al(NO_3)_3$

7 $(NH_4)_2SO_4$

8 $CuCO_3$

9 $AgNO_3$

10 NH_4NO_3

★★☆

Review

Turn to the back of the booklet and mark your answers

Score: / 10

2 Mole Calculations

Watch

https://www.youtube.com/watch?v=wPGVQu3UXpw

Practice

1) Calculate the number of moles of each of the following substances. Give your answers to 3 sig figs.

a) 90.0 g of H_2O .....

b) 20.0 g of C_4H_{10} .....

c) 685 g of NH_3 .....

d) 102 tons of O_2 .....

e) 2.00 kg of Al_2O_3 .....

f) 20.6 mg of Au .....

2) Calculate the mass of each of the following substances. Give your answers to 3 sig figs.

a) 4.00 moles of N_2 .....

b) 0.100 moles of HNO_3 .....

c) 0.0200 moles of K_2O .....

d) 2.50 moles of PH_3 .....

e) 0.400 moles of C_2H_5OH .....

f) 10.0 moles of $Ca(OH)_2$ .....

★★☆ Review

Turn to the back of the booklet and mark your answers

Score: / 12

Answers

① Ionic Formulae (*page 9)*

1

a) NaI
b) K_2O
c) $AlCl_3$
d) $MgBr_2$
e) Al_2O_3
f) FeO
g) Fe_2O_3
h) MgS
i) CuF_2
j) LiI
k) $BaBr_2$
l) ZnS
m) PbI_2
n) Fe_2S_3
o) MgO
p) RbBr
q) $SrCl_2$
r) CsSe
s) $CaAt_2$
t) RaPo
u) GaF_3
v) $ScBr_3$
w) Cr_2O_3
x) SrI_2
y) Li_3As

2

a) Na_2SO_4
b) $CaSO_4$
c) $Mg(OH)_2$
d) $Zn(NO_3)_2$
e) $CuCO_3$
f) NaOH
g) K_2CO_3
h) $Fe(OH)_3$
i) NH_4NO_3
j) NH_4OH
k) $Fe_2(SO_4)_3$
l) $Al(NO_3)_3$
m) $AgNO_3$
n) $CaCO_3$
o) $Mg(NO_3)_2$
p) NH_4At
q) $CsNO_3$
r) $Sr(OH)_2$
s) $Pt(NO_3)_2$
t) $CoCO_3$
u) Cu_2O
v) CuO
w) Fr_2Te
x) AuF
y) Rb_2SO_4

② Balancing Equations (*page 11)*

1) $2\,Na + 2\,H_2O \rightarrow 2\,NaOH + H_2$

2) $2\,KOH + H_2SO_4 \rightarrow K_2SO_4 + 2\,H_2O$

3) $Mg(NO_3)_2 + 2\,NaOH \rightarrow Mg(OH)_2 + 2\,NaNO_3$

4) $4\,NO + 2\,H_2O + 3\,O_2 \rightarrow 4\,HNO_3$

5) $C_5H_{12} + 8\,O_2 \rightarrow 5\,CO_2 + 6\,H_2O$

6) $Br_2 + 2\,NaI \rightarrow 2\,NaBr + I_2$

7) $K_2CO_3 + 2\,HNO_3 \rightarrow 2\,KNO_3 + CO_2 + H_2O$

8) $2\,NaHCO_3 \rightarrow Na_2CO_3 + H_2O + CO_2$

9) $ZnCO_3 \rightarrow ZnO + CO_2$

3 Formula Mass Calculations (*page 14*)

1	F_2	2(19)	= 38
2	Fe		= 56
3	H_2SO_4	2(1) + 32 + 4(16)	= 98
4	Al_2O_3	2(27) + 3(16)	= 102
5	$Mg(OH)_2$	24 + 2(16) + 2(1)	= 58
6	$Al(NO_3)_3$	27 + 3(14) + 9(16)	= 213
7	$(NH_4)_2SO_4$	2(14) + 8(1) + 32 + 4(16)	= 132
8	$CuCO_3$	63.5 + 12 + 3(16)	= 123.5
9	$AgNO_3$	108 + 14 + 3(16)	= 170
10	NH_4NO_3	14 + 4(1) + 14 + 3(16)	= 80

4 Mole Calculations (*page 15*)

1) Calculate the number of moles of each of the following substances. Give your answers to 3 significant figures.

a) 90.0 g of H_2O — $\frac{90.0}{18} = 5.00$

b) 20.0 g of C_4H_{10} — $\frac{20.0}{58} = 0.345$

c) 685 g of NH_3 — $\frac{685}{17} = 40.3$

d) 102 tons of O_2 — $\frac{102000000}{32} = 3190000\ (3.19 \times 10^6)$

e) 2.00 kg of Al_2O_3 — $\frac{2000}{102} = 19.6$

f) 20.6 mg of Au — $\frac{0.0206}{197} = 0.000105\ (1.05 \times 10^{-4})$

2) Calculate the mass of each of the following substances. Give your answers to 3 significant figures.

a) 4.00 moles of N_2 — $4.00 \times 28 = 112$ g

b) 0.100 moles of HNO_3 — $0.100 \times 63 = 6.30$ g

c) 0.0200 moles of K_2O — $0.0200 \times 94 = 1.88$ g

d) 2.50 moles of PH_3 — $2.50 \times 34 = 85.0$ g

e) 0.400 moles of C_2H_5OH — $0.400 \times 46 = 18.4$ g

f) 10.0 moles of $Ca(OH)_2$ — $10.0 \times 74 = 740$ g