

Lower Sec: Choosing your option in Subject Allocation Exercise

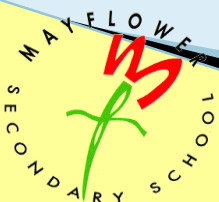
Aug 2026



Mighty in Thought & Deed
A Zest for Life, A Curious Mind & A Generous Spirit

Guiding Questions

- Do you have a keen interest and passion for science?
- Are you considering science-related courses in JC or Poly?
- Do you want to focus more on science subjects in upper secondary?
- Are there non-science subjects you'd like to explore?
- Do you prefer Biology or Physics, and why?
- Are your choices based on interest or results?
- Will your peers' or parents' choices influence your decision?

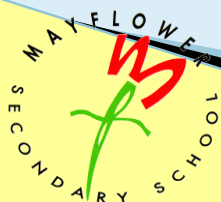


G3 Pure and G3 Combined Science – Differences and requirements

Pure Science	Combined Science
5/6 periods per week (Swap of no of periods semesterly)	3 periods per week
[11 periods per week for 2 pure sciences]	[6 periods per week for combined science]
Offers more depth and coverage of a single science discipline	Offers broad understanding of various areas of science simultaneously
Can be used for entry to JC and Poly	Can be used for entry to JC and Poly
Able to take H2 pure science in JC	Able to take H2 pure science in JC

Upper Secondary Syllabus

<https://www.seab.gov.sg/secondary-education-certificate-sec/>



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G3 Pure and G3 Combined Science – Differences and requirements

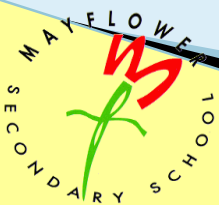
Pure Science	Combined Science
Separate grade for each subject	Combined grade for 2 subjects
15% Recall (R) 30% Recall with understanding (R/U) 55% Handling information and solving problems (HISP)	20% Recall (R) 30% Recall with understanding (R/U) 50% Handling information and solving problems (HISP)
P1 MCQs (40 marks, 1 hr) – 30%	P1 MCQs (20 marks + 20 marks, 1 hr) – 10% x 2 subjects
P2 Structured and Free Response (with 3 long qns) (80 marks, 1 hr 45 min) – 50%	P2/3/4 Structured and Free Response (with 2 long qns) (65 marks, 1 hr 15 min) – 32.5% x 2 science subjects
P3 Practical Test of <u>2.5 qns</u> (40 marks, 1 hr 50 min) – 20%	P5 Practical Test of <u>1 qn</u> per science subject (30 marks, 1 hr 30 min) – 7.5% x 2 science subjects

Example of Question type: R, R/U and HISP

R – Explain what is meant by gravitational field strength.

R/U - Describe how the gravitational field strength of the Earth changes as an astronaut blasts off from its surface.

HISP – [Diagram is given] Compare the gravitational field strength of Earth and Planet X at the same distance from their centres. Suggest one reason why Planet X has a lower gravitational field strength than Earth.



G3 & G2 Combined Science – Differences and requirements

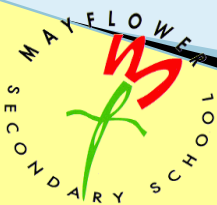
G3 Combined Science	G2 Combined Science
Combined grade for 2 subjects	Combined grade for 2 subjects
20% Recall (R) 30% Recall with understanding (R/U) 50% Handling information and solving problems (HISP)	20% Recall (R) 25% Recall with understanding (R/U) 45% Handling information and solving problems (HISP) 5% Experimental Skills and Investigation (ESI)
P1 MCQs (20 marks + 20 marks ,1 hr) – 10% x 2 subjects	P1/2 (Phy, 1 hr 15 min) – 50% - 20 marks MCQs + 30 marks structured qn (2 long qns) P3/4 (Chem, 1 hr 15 min) – 50% - 20 marks MCQs + 30 marks structured qn (2 long qns) P5/6 (Bio, 1 hr 15 min) – 50% - 20 marks MCQs + 30 marks structured qn (2 long qns)
P2/3/4 Structured and Free Response (with 2 long qns) (65 marks, 1 hr 15 min) – 32.5% x 2 science subjects	No Practical Test
P5 Practical Test of 1 qn per science subject (30 marks, 1 hr 30 min) – 7.5% x 2 science subjects	

Example of Question type: R, R/U and HISP

R – Explain what is meant by gravitational field strength.

R/U - Describe how the gravitational field strength of the Earth changes as an astronaut blasts off from its surface.

HISP – The mass of an astronaut is 80 kg. At the Earth's surface, the gravitational field strength is 10 N/kg. Calculate the weight of the astronaut on the Moon, where the gravitational field strength is 1.6 N/kg.



Considerations before choosing your options

► What really matters for you

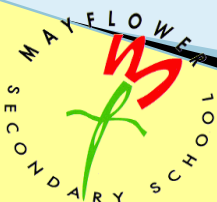
- Interest and passion in the subject
- Strengths and weaknesses
- Future pathways and career aspirations

Chemistry, Biology and Physics – Subject Differences

Biology	Chemistry	Physics
study of life and hence, biology education provides an understanding of how living organisms function and interact at the organismal, physiological and molecular levels.	study of the structure, properties and transformation of matter at the atomic/molecular level.	fundamental science which is concerned with understanding the natural world. A small number of basic principles and laws can be applied to explain and predict a wide range of physical events and phenomena.

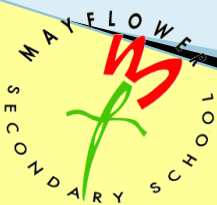
G3 Pure Chemistry vs G3 Sci Chemistry (Topics)

1	Experimental Chemistry	12	Oxidation and Reduction
2	Kinetic Particle Theory	13	Electrochemistry
3	Atomic Structure	14	The Periodic Table
4	Chemical Bonding	15	The Reactivity Series
5	Structure and Properties of Materials	16	Chemical Energetics
6	Chemical Formulae and Equations	17	Rate of Reactions
7	Mole Concept and Stoichiometry	18	Fuels and Crude Oil
8	Acids and Bases	19	Hydrocarbons
9	Salts	20	Alcohols, Carboxylic Acids and Esters
10	Ammonia	21	Polymers
11	Qualitative Analysis	22	Maintaining Air Quality



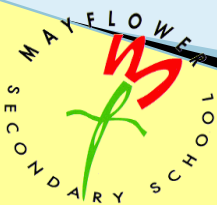
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8	Acids and Bases	16	Hydrocarbons
		17	Alcohols, Carboxylic Acids and Esters
		18	Polymers
9	Qualitative Analysis	19	Maintaining Air Quality



G3 Sci Chemistry vs G2 Sci Chemistry (Topics)

1	Experimental Chemistry		
2	Kinetic Particle Theory		
3	Atomic Structure	10	The Periodic Table
4	Chemical Bonding	11	The Reactivity Series
5	Structure and Properties of Materials		
6	Chemical Formulae and Equations		
7	Mole Concept and Stoichiometry	12	Fuels and Crude Oil
8	Acids and Bases	13	Hydrocarbons
		14	Polymers
9	Qualitative Analysis	15	Maintaining Air Quality



Kinetic Particle Theory (Differences between G3 Pure Chem and G3 Sci Chem)

2.1 Kinetic Particle Theory

(a) describe the solid, liquid and gaseous states of matter and explain their interconversion in terms of the kinetic particle theory and of the energy changes involved

(b) describe and explain evidence for the movement of particles in liquids and gases (the treatment of Brownian motion is not required)

(c) explain everyday effects of diffusion in terms of particles, e.g. the spread of perfumes and cooking aromas; tea and coffee grains in water

(d) state qualitatively the effect of molecular mass on the rate of diffusion and explain the dependence of rate of diffusion on temperature.

2.2 Atomic Structure

(a) state the relative charges and approximate relative masses of a proton, a neutron and an electron

(b) describe, with the aid of diagrams, the structure of an atom as consisting of protons and neutrons (nucleons) in the nucleus and electrons arranged in shells (energy levels) (knowledge of s, p, d and f classification is not required; a copy of the Periodic Table will be available in Papers 1 and 2)

(c) define proton (atomic) number and nucleon (mass) number

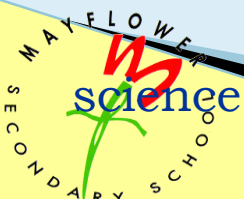
(d) interpret and use nuclide notations such as C 12 6

(e) define the term isotopes

(f) deduce the numbers of protons, neutrons and electrons in atoms and ions given proton and nucleon numbers.

G3 Science Chem - only cover points in bold

Summary: You do more topics and in greater depth in G3 pure than in G3 combined science



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Examples of requirements – G3 Pure Chemistry

2. The boxes show the structures and melting points of three compounds, poly(propene), silicon dioxide and propanol.

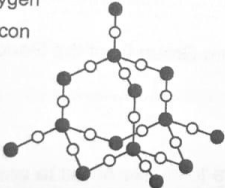
poly(propene)

$$\left[\begin{array}{cccccc} \text{H} & \text{CH}_3 & \text{H} & \text{CH}_3 & \text{H} & \text{CH}_3 \\ | & | & | & | & | & | \\ -\text{C}- & \text{C}- & \text{C}- & \text{C}- & \text{C}- & \text{C}- \\ | & | & | & | & | & | \\ \text{H} & \text{H} & \text{H} & \text{H} & \text{H} & \text{H} \end{array} \right]_n$$

melting point: 160 °C

silicon dioxide

○ oxygen
● silicon



melting point: 1600 °C

propanol

$$\begin{array}{ccccccc} & \text{H} & & \text{H} & & \text{H} & \\ & | & & | & & | & \\ \text{H} & -\text{C} & - & \text{C} & - & \text{C} & - \text{O} - \text{H} \\ & | & & | & & | & \\ & \text{H} & & \text{H} & & \text{H} & \end{array}$$

melting point: -126 °C

(a) Give the **empirical formula** of poly(propene) and the **molecular formula** of propanol. [2]
 (b) Compare the **bonding and structures** of the three compounds. [4]
 (c) Explain why the melting points of the three compounds differ from each other. [4]

[N17/2/9 OR]

- May have more than 1 diagram in a question
- Students are expected to give correct SI unit for calculation questions
- Theory question can be 3 to 5 marks and need to answer with reference to specific concepts asked
- More “synoptic” – 2 or 3 chapters in a question

Examples of requirements – G3 Sci Chemistry

(b) Another of these compounds, magnesium chloride, has a high melting point and is a conductor of electricity when molten.

ii. Name the type of chemical bonding present in magnesium chloride.
..... [1]

iii. Draw a 'dot and cross' diagram to show the arrangement of electrons in magnesium chloride in the space below
[Proton numbers: Mg, 12; Cl, 17]

Mass of fayalite = g [2]

iii. Calculate the volume of 1000 g of hydrogen.

[2]

[N15/3/4]

Units are given

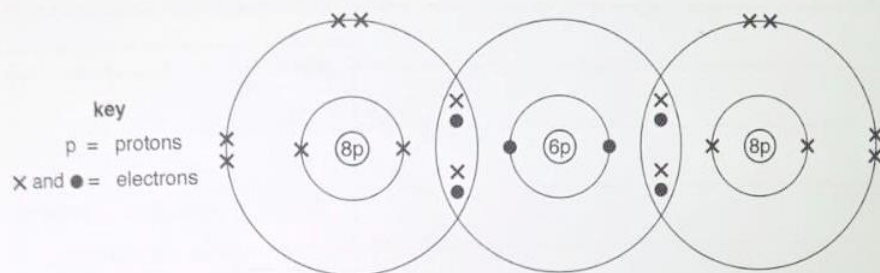
Volume of hydrogen = dm³ [2]

[N16/3/6(c)]

- SI unit are always given to students for calculation questions
- Theory question can be 2 to 3 marks
- Less “synoptic” - usually 1 to 2 chapters in a question

Examples of requirements – G2 Sci Chemistry

The 'dot and cross' diagram shows the arrangement of all the electrons in a molecule of compound Z.



- (a) Name Z. [1]
- (b) What type of bonding is present in Z? [1]
- (c) Draw a 'dot and cross' diagram to show the arrangement of all the electrons in a molecule of methane, CH_4 . [3]

(2016 P4A Q3)

- SI unit are always given to students for calculation questions
- Theory question can be 1 to 2 marks. – required answers are usually shorter than G3 Sci Chemistry. Context is still as novel
- 3 marks for questions like drawing diagrams
- Less “synoptic” - usually 1 to 2 chapters in a question

Some tips

Making a wise choice

- ▶ Reflect on your strengths and interests
- ▶ Think about your future plans
- ▶ Discuss with your parents
- ▶ Work towards your ambition

Improving in Science

- ▶ Clarify your doubts with your teacher early
- ▶ Work consistently

