Assessment in Science (Years 7 and 8)

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Contents

[A] Assessment in Science: An Overview

This section provides an introductory overview of assessment in science at years 7 and 8.

- **Marks** to be entered on the online portal are summarised in the table below.

Programme	Mid-yearly		Annual		
	Continuous	Summative	Continuous	Summative	Global*
Year 7 *(mainstream)*	Award a mark out of 100	*not applicable*	Award a mark out of 100	Award a mark out of 100	30% continuous + 70% summative
Year 8 *(mainstream)*	Award a mark out of 100	*not applicable*	Award a mark out of 100	Award a mark out of 100	30% continuous + 70% summative
Year 7 *(CCP)*	Award a mark out of 100	*not applicable*	Award a mark out of 100	*not applicable*	*not applicable*
Year 8 *(CCP)*	Award a mark out of 100	*not applicable*	Award a mark out of 100	*not applicable*	*not applicable*

** The marks in this column are calculated automatically by the online portal, based on the assessment weightings indicated.*

- The **mainstream mid-yearly continuous** assessment mark, is to be based on a relevant mix of tasks **chosen by the teacher,** carried out during the first **half** of the academic year. Examples of tasks that can be considered include hands-on activities, written and oral revision tests, class work, practical work, projects, research, homework and other learning activities. [see Section B].

- The **mainstream annual continuous** assessment mark is to be based on a **prescribed mix of tasks** [see Section C and Section D]. These tasks are to be carried out during the **whole** academic year.

- The **mainstream annual summative** assessment is based on an exam paper issued centrally.

- The **CCP mid-yearly continuous** assessment marks, as well as the **CCP annual continuous** assessment marks are to be based on a relevant mix of tasks **chosen by the teacher**. Examples of tasks that can be considered include hands-on activities, written and oral revision tests, class work, practical work, projects, research, homework and other learning activities. Additional suggestions are provided in Section K.

- Note on the **ANNUAL GLOBAL ASSESSMENT MARK:**
  For year 7 and year 8 (mainstream programmes), an annual global assessment mark will be calculated automatically by the online portal. This mark will have the following weighting:

  - **70% of the annual summative assessment mark**
  - **30% of the annual continuous assessment mark**

*The rest of this document offers more details and guidelines about the **continuous assessment** component in Science (years 7 and 8).*

[B] Mid-yearly Continuous Assessment for Years 7 and 8

- The mid-yearly continuous assessment mark in science for both year 7 and year 8 will be based on a selection of **tasks chosen at the discretion of the science teacher**.
- The choice of activities can include a number of graded activities such as classwork, tests, quizzes, report writing, presentations, journals, portfolios, one-minute papers, online activities, homework, games, authentic assessment tasks, practical work, projects, out-of-class activities and other valid activities.
- It is recommended that the choice of tasks includes a variety of such activities.
- Practical work, project-based learning, fieldwork and school-based assessment on which the annual continuous assessment mark is based, can also be factored in the calculation of the mid-yearly assessment mark.
- The mid-yearly continuous assessment mark for years 7 and 8 to be entered on the online portal is to be a mark out of 100.

[C] Annual Continuous Assessment for Year 7

The annual continuous assessment mark in science for year 7 will be based on practical work, fieldwork and school-based assessment. Students can be awarded a maximum of 15 marks for practical work, 10 marks for fieldwork and 5 marks for school-based assessment. The resulting mark, out of 30, is to be converted into a percentage mark. This mark, out of 100, is to be entered on the online portal.

[Example] A student obtains the following marks:

Continuous Assessment component	Maximum Mark	Student's Mark
Practical Work (average mark)	**15**	**12**
Fieldwork	**10**	**8**
Subject-based Assessment	**5**	**4**
Total Continuous Assessment	**30**	**24**

Proportionally 24/30 is equal to 80/100.
80 is the final annual continuous assessment grade to be entered on the online portal.

The annual continuous assessment mark for year 7 should be based on a **compulsory** set of tasks as follows:

[C.1] 15% PRACTICAL WORK (*based on 7 practical reports*)

- refer to examples of possible Science Experiments in section F;
- 7 reports should be the **minimum** number of practicals done and not the maximum;
- should include at least one experiment from each science strand (Physics, Chemistry and Biology);
- each practical is marked out of 15;
- **marking criteria** will be as follows:

	Marks *(Total 15)*
Participation during the experiment (*such as handling of apparatus, scientific talking within the group, teamwork*)	**7**
Report	**5**
Safety issues	**3**

- average mark will be calculated out of the best 7 practical reports (according to the above criteria) and any missing reports should be awarded a '0';
- students are to place the practical reports in a separate file or separate section of their science file, to be made easily available for moderation purposes.

[C.2] 10% FIELDWORK

- for **marking criteria,** refer to Section H;
- all Learning Outcomes (LOs) related to fieldwork listed within the unit '**7.3 Investigating Local Habitats**', **will not** feature in the annual exam paper, but must be covered during a fieldwork session;
- students, who for a **valid reason** are absent for the fieldwork session, will be asked to take an extra question in the annual paper for which they will be granted 15 extra minutes.

[C.3] 5% SCHOOL-BASED ASSESSMENT

- may include important class activities, homework, revision tests, student's participation in science projects or fairs, and other learning activities, but **should not** be awarded on the basis of behaviour.

[D] Annual Continuous Assessment for Year 8

The annual continuous assessment mark in science for year 8 will be based on practical work, project-based learning (PBL) and school-based assessment. Students can be awarded a maximum of 15 marks for practical work, 10 marks for PBL and 5 marks for school-based assessment. The resulting mark, out of 30, is to be converted into a percentage mark. This mark, out of 100, is to be entered in the online portal.

[Example] A student obtains the following marks:

Continuous Assessment component	Maximum Mark	Student's Mark
Practical Work (average mark)	**15**	**10**
PBL	**10**	**6**
Subject-based Assessment	**5**	**2**
Total Continuous Assessment	**30**	**18**

Proportionally 18/30 is equal to 60/100.
60 is the final annual continuous assessment grade to be entered on the online portal.

The annual continuous assessment mark for year 8 should be based on a **compulsory** set of tasks as follows:

[D.1] 15% PRACTICAL WORK (*based on 7 practical reports*)

- refer to examples of possible Science Experiments in Section G.
- 7 reports should be the **minimum** number of practicals done and not the maximum;
- should include at least one practical from each science strand (Physics, Chemistry and Biology);
- should include one practical related to Forensic Science;
- should include one site visit;
- marked out of 15;
- **marking criteria** will be as follows:

	Marks *(Total 15)*
Participation during the experiment (*such as handling of apparatus, scientific talking within the group, teamwork*)	**7**
Report	**5**
Safety issues	**3**

- average mark will be calculated out of the best 7 practical reports (according to the above criteria) and any missing reports should be awarded a '0'.
- students are to place the practical reports in a separate file or separate section of their science file, to be made easily available for moderation purposes.

[D.2] 10% PROJECT-BASED LEARNING

- the science teacher must choose **one** topic from '**What is Energy?**' and '**Forces**' for PBL;
- the topic which is not chosen for PBL will not be tackled during the academic year;
- neither the topic '**What is Energy?**' nor the topic '**Forces**' will feature in the annual exam, irrespective of which topic is chosen for PBL;
- for PBL **marking criteria,** see Section I;
- note that **students are requested to jot down notes related to the process involved in a journal** (notes can be related to developing the research question, peer & self-assessment, etc.) which should be presented for **moderation purposes**; on the other hand students **will not** be asked to present their final product (such as model, power point presentation, leaflets produced, etc.);
- PBL is to be covered by end of the second scholastic term so that **moderation of PBL may be carried out as from the first week of May.**

[D.3] 5% SCHOOL-BASED ASSESSMENT

- may include important class activities, homework, revision tests, student's participation in science projects or fairs, and other learning activities, but should not be awarded on the basis of behaviour.

[E] Science Experiments for Year 7 and Year 8

Practical work is an important component of science teaching, learning and assessment. This section provides some guidelines on setting appropriate practical work and levelling the right expectations.

[E.1] GUIDELINES for PRACTICAL WORK and EXPERIMENT REPORTS

Initially (first weeks of year 7), there is no need to put a lot of emphasis on formal, standard scientific reporting. A very short description of the experiment carried out should be enough. At such an early stage, the primary aim should be to involve students in the practical aspect of their science education. The emphasis and time allotted to writing a report should not take over the enjoyment of doing practical work! Gradually, the teacher will guide the students through the process of adding sections and details to compile a complete scientific report. For this reason, it is expected to see differences between a report completed in October of Year 7 and May of Year 8.

While teachers, often, will do more than 7 practicals per academic year with their respective classes, for the purpose of the annual continuous assessment grade, the best 7 marks should be taken into consideration. The criteria for the '15% Practical Work' for year 7 and/or year 8 (sections C.1 and D.1) are to be met. Any practical work over and above that included in the continuous assessment mark calculation may or may not have a 'formal' report structure.

It is up to the teacher to decide how practical reports, valid for the continuous assessment annual mark, are to be filed and organised. **However, it is important that the section for practical reports in the students' file (or a separate file) is made available separately for moderation purposes.**

Year 7

By the end of year 7 students are to have:

- at least **7 practical reports;**
- should include **at least one experiment from each of the three strands** i.e. Physics, Chemistry and Biology;
- one experiment **can be** a science-related educational visit but cannot be a fieldwork (as for year 7 a fieldwork report is requested in a dedicated section).

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Year 8

By the end of year 8 students are to have:

- at least **7 practical reports;**
- should include **at least one experiment from each of the three strands** i.e. Physics, Chemistry and Biology;
- **one experiment related to forensic science**;
- one science-related educational visit report **must be** included as one of the presented reports.

[E.2] GRADING PRACTICAL WORK

The final mark (out of 15) for the practical work component is worked out by calculating the average mark of the best 7 practical reports (while meeting the criteria for the respective academic year). Each experiment report should have a mark out of a maximum of 15. Use your professional judgment to assess the student's involvement during the session and to grade the written report. Using the marking criteria below as well as creating your own scoring rubrics, can help you be as objective as possible and award a fair grade.

	Marks ***(Total 15)***
Participation during the experiment (*such as handling of apparatus, scientific talking within the group, teamwork*)	**7**
Report	**5**
Safety issues	**3**

[F] Suggested List of Science Experiments for Year 7

This is a list of suggested Year 7 experiments, some of which may be used for demonstration purposes. Teachers should feel free to include any other valid syllabus-related practicals in their scheme of work.

	UNIT/LESSON	DESCRIPTION/EXPERIMENT
7.1	**Doing Science**	
1	Page 10 LOs 6, 7 & 8	Exploring key aspects of practical work
2	Page 10 LOs 6, 7 & 8	Making and Recording Observations
3	Page 10 LOs 9 & 10	Light and use the Bunsen Burner safely
4	Page 10 LOs 11 & 12	Observe how oxygen is used in Burning
7.2	**Our Natural Environment**	
5	Page 16 LO 9	Animal adaptations (e.g. finding the right habitat for a woodlouse)
6	Page 16 LO 9	Observing animal features & adaptations
7	Page 16 LO 9	Observing plant features & adaptations
8	Page 16 & 17 LO various	Site Visit (e.g., Nature Reserve, Għar Dalam, etc.)
9	Page 16 LO 11	Basic photosynthesis experiments
10	Page 17 LO 18	Producing recycled paper
11	Page 17 LO 18	Modelling effect of acid rain
12	Page 17 LO 20	Modelling the greenhouse effect
13	Page 17 LO 21 & 22	Test for CO_2
7.3	**Investigating Local Habitats**	
14	Page 22 LO all	Fieldwork activities
7.4	**Understanding matter**	
15	Page 26 LO 2	Properties of solids, liquids and gases
16	Page 26 LO 13	Mixing rice and balls
17	Page 26 LO 12, 13 & 14	Change of state
18	Page 26 LO 12, 13 & 14	Ball & ring / Bimetallic strip
19	Page 26 LO 12, 13 & 14	Expansion of liquids and gases
20	Page 26 LO 12, 13 & 14	Melting wax demonstration
7.5	**Acids and Alkalis**	
21	Page 31 LO 6	Making indicators (red cabbage)
22	Page 31 LO 7	Identifying acids and alkalis using litmus
23	Page 31 LO 9	Finding the pH using universal indicator
24	Page 31 LO 11	Reaction of magnesium / zinc with acid
25	Page 31 LO 11 & 12	Production and testing of Hydrogen
26	Page 31 LO 15	Explore neutralisation reactions (e.g., filter paper circles, indicator rainbow)

7.6	Earth and Space	
27	Page 36 LO 7	Observing and recording moon phases
28	Page 37 LO 18	Measuring mass and weight
29	Pages 36 & 37 LO various	Visit the planetarium (Esplora)
7.7	**Cells and Reproduction**	
30	Page 42 LO 2	Using the microscope
31	Page 42 LO 3	Observing cells under the microscope
32	Page 42 LO 3	Preparing microscope slides
33	Page 42 LO 11	Dissecting a flower

[G] Suggested List of Science Experiments for Year 8

This is a list of suggested Year 8 experiments, some of which may be used for demonstration purposes. Teachers should feel free to include any other valid syllabus-related practicals to their scheme of work.

	UNIT/LESSON	DESCRIPTION/EXPERIMENT
8.1	**Healthy Living**	
1	Page 9 LO 1	Food Tests
2	Page 9 LO 8	Measuring volume of exhaled air (spirometer)
3	Page 9 LO 9	Smokey Sue /Chemicals in smoke
4	Page 9 LO 12	Heart and Lung dissection
5	Page 9 LO 15	Pulse rate
6	Page 9 LO 16	Test for CO_2
7	Page 10 LO 17	Yeast
8.2	**Elements, Compounds and mixtures**	
8	Page 13 LOs 4, 6,	Properties of elements and compounds
9	Page 13 LO 9	Test for Oxygen
10	Page 13 LO 11	Breaking down a compound (electrolysis)
11	Page 13 LO 14	Examples of Physical / Chemical Changes
12	Page 13 LO 15	Simple chemical reactions
13	Page 13 LO 15, 16	Rusting
8.3	**Separating Mixtures**	
14	Page 15 LO 1	Soluble / insoluble things
15	Page 15 LOs 2, 3	Solvents
16	Page 15 LO 4	Factors affecting solubility
17	Page 15 LO 7	Chromatography
18	Page 15 LO 9	Filtration
19	Page 15 LO 11	Evaporation
20	Page 15 LO 12	Distillation
21	Page 15 LO 14	Separate a complex mixture
8.4	**Light and Sound**	
22	Page 18 LO 1	Light rays
23	Page 18 LOs 5, 6	Dissection of the eye
24	Page 18 LO 7	Exploring different sounds
25	Page 18 LO 7	Vibrations and sounds
26	Page 18 LO 10	Bell jar experiment
27	Page 18 LO 16	Investigating sounds using data loggers
8.5	**Forensic science**	
28	Page 22	Experiments depend upon the type of scenario presented. Tests may include observations, measurements, fingerprints, bite marks to identify

		human teeth, chromatography, flame tests, microscope work, etc.
8.6	**Climate Change**	
29	Page 25 LO 2	Effect of acid rain on limestone
30	Page 25 LO 4	Burning of [illegible]
31	Page 25 LO 5	[illegible] CO_2
32	Page 25 LO 8	Greenhouse effect [illegible]
33	Page 25 LO 13	Making of [illegible] paper
8.7	**Fieldwork**	
34	Page 27	Fieldwork
8.8	**Earth and Space**	
35	Page 30 LO 18	Mass and Weight

[H] Fieldwork Marking Criteria for Year 7

Please refer to Unit 7.3 'Investigating Local Habitats' in the Year 7 Science syllabus. These LOs WILL NOT feature in the annual exam paper.

Students who are absent for the fieldwork trip for a valid reason (and did not have the opportunity to join any other group) will be offered an extra question during the exam. An extra 15 minutes will be given to answer this question. This question may tackle ANY LOs found in Unit 7.3.

The marking rubric below is out of a total of 20. However, the mark awarded should be divided by 2 to contribute 10 marks out of 30 for the annual continuous assessment mark.

1. Group work collaboration and participation: (photos including caption can be included here).	(3 marks)
2. Followed fieldwork rules, including safety measures: (take nothing but photos, leave nothing but footprints).	(3 marks)
3. Correct use of measuring techniques, collection of data and observation skills.	(7 marks)
4. Presentation and interpretation of data: (correct reference of habitats, biodiversity, adaptations and influence of human behaviour on the environment).	(7 marks)

(Total 20 marks)

[I] Project-based Learning Marking Criteria for Year 8

The PBL process needs to be ready by the end of the second term, as a moderation exercise may be carried out in May. Documentation related to planning, teacher, student and peer assessment will be presented in a PBL journal.

The marking rubric below is out of a total of 20. However, the mark awarded should be divided by 2 to contribute 10 marks out of 30 for the annual continuous assessment mark.

1. Teacher's assessment (14 marks)

Skills demonstrated in researching a topic, planning and designing the project.	(4 marks)
Communicating research/project findings and presenting final product to peers.	(4 marks)
Assessment of the final product *(e.g. brochure, power point presentation, board game, leaflet, experimental set up, model, video, bookmark etc).* This is to include also marks on content knowledge shown in producing the final product and should not only be limited to the design of the final product.	(4 marks)
Skills demonstrated during the process (*flexibility, initiative leadership, social skills, productivity, and collaboration).*	(2 marks)

2. Student Self-Assessment (3 marks)

This should include evidence, (e.g. short paragraph or ticking of success criteria) which show that the student has reflected. (3 marks)

3. Peer Assessment (3 marks)

Teachers should provide a few criteria for which students are to judge final products of projects presented by other teams in their class. (3 marks)

(Total 20 marks)

[J] Inputting the Continuous Annual Assessment Marks in the Online Portal

The assessment portal requires all assessment marks to be entered and displayed out of a maximum of 100 (percentage). This applies for all subjects. **Thus, the annual continuous assessment mark that is graded out of 30 should be converted to a percentage. The resulting mark out of 100 should be entered on the online portal. Below is an example:**

	Practical work	PBL / Fieldwork	SBA	Out of 30	100%
Maximum Mark	15	10	5	30	100
Example Mark	12	8	3	23	**77**

[K] Continuous Assessment for CCP Programmes

Students following the Core Curriculum Programme (CCP) in Science will be assessed via tasks distributed across the whole scholastic year. One task will be taken by CCP students during the annual exam period.

The choice of tasks and how these tasks are graded is at the discretion of the science teacher. However, both the mid-yearly and the annual continuous assessment marks are to be converted into a final grade out of 100.

A list of suggested activities can be found below. This list is by no means exhaustive, and teachers are encouraged to adapt these activities or indeed come up with different ones according to the aptitudes and abilities of the students concerned.

[K.1] CCP SUGGESTED ASSESSMENT TASKS FOR YEAR 7

UNIT 1: DOING SCIENCE

- Presentation (e.g., power-point, chart or video) about the subject of safety in the laboratory;
- Building a board game with issues related to safety;
- Matching labels with apparatus;
- Carrying out simple practical tasks (e.g., measuring, mixing and others);
- Participating in an apparatus bingo.

UNIT 2: EXPLORING NATURE

- Exercise about sorting into groups;
- Observing simple characteristics of living organisms;
- Linking organisms with the respective habitat;
- Forming a food chain (looping picture cards of organisms and arrows with strings).

UNIT 3: CHEMICAL MATTERS

- Sorting objects according to their state of matter;
- Conducting a 'water cycle in a bag' activity;
- Identifying chemicals as acids or alkalis;
- Testing acids and alkalis with a litmus paper;
- Making an indicator.

UNIT 4: EARTH AND SPACE

- Using an Earth model and a torch light to investigate day and night;
- Building a solar model;
- Matching environment conditions with corresponding seasons;
- Watching a video about space and stars followed by a matching exercise.

UNIT 5: CELLS AND REPRODUCTION

- Using a light microscope;
- Putting different organs in place on a human torso;
- Sorting good and bad practices for a pregnant woman;
- Putting different stages of a life cycle in order.

[K.2] CCP SUGGESTED ASSESSMENT TASKS FOR YEAR 8

UNIT 1: HEALTHY LIVING

- Matching types of food to the correct main nutrient;
- Designing different meals for different lifestyles (paper plate activity);
- Placing organs in their correct place on an organ tunic;
- Comparing pulse rate before and after exercise;
- Role playing to demonstrate transmission of disease.

UNIT 2: INVESTIGATING CHEMICALS

- Designing garments using chromatography (e.g., t-shirts and caps);
- Building up a pie chart showing components of soil;
- Burning a candle (rising coloured water in a beaker);
- Identifying the best way of separating things;
- Experimenting with chemical reactions (e.g., burning magnesium, elephant toothpaste, etc.);
- Growing crystals.

UNIT 3: FORENSIC SCIENCE

- Biting a polystyrene cup to show teeth impressions;
- Colouring different types of tooth;
- Matching unknown thumbprints with student fingerprints;
- Designing a race track using different surfaces;
- Comparing paper thickness and strength using a Newton metre.

UNIT 4: Fieldwork

- Sorting renewable and non-renewables sources of energy;
- Sort it out! - sorting types of waste material;
- Matching adaptations and respective organisms;
- Reflection on human (including self) impact on the environment.

UNIT 5: Earth and Space

- Using an Earth model and a torch light to investigate day and night;
- Building a solar model;
- Matching environment conditions with corresponding seasons;
- Watching a simple video about space and stars followed by a matching exercise.