



General Certificate of Secondary Education  
2021

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# **Biology**

Unit 3: Practical Skills

**Booklet A**

**Higher Tier**

**[GBL33]**

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## **APPARATUS AND MATERIALS LIST AND CONFIDENTIAL INSTRUCTIONS**

**To be accessed by Head of Department only**

It is the responsibility of the centre to ensure that appropriate risk assessments are carried out for all practical skills assessments.

## Task 1: Investigating one factor needed for photosynthesis

It is the responsibility of the centre to ensure that an appropriate risk assessment is carried out for this investigation.

### Apparatus and materials (per group)

- Iodine solution (0.01 M)
- Ethanol
- Geranium plants/Pelargonium/Busy Lizzie
- Safety glasses
- 250 cm<sup>3</sup> beaker
- Boiling water (kettle)
- Boiling tube containing approx 20 cm<sup>3</sup> ethanol (enough to cover leaf)
- Petri dish
- Forceps
- Glass rod
- Boiling tube rack
- Stop clock
- Heatproof mat

### Teacher Instructions

1. Teachers should trial the experiments in advance to ensure that appropriate sets of results can be obtained using the equipment and materials available to the centre.
2. Normal precautions with hot water, waterbaths, iodine solution and lamps left overnight should be observed.
3. Ethanol is required in Task 1 for the starch test. **All ethanol needs to be removed from the laboratory before Task 2 is started since lit Bunsen burners are used in Task 2.**
4. Schools will need plants suitable for use in the starch test. In trials, Geranium, Pelargonium and Busy Lizzie were found to work well.
5. The plants to be used for the experiment need to be destarched by placing in a dark cupboard for 48 hours.
6. Teachers then need to partially cover leaves of the plants with strips of dark card using paper clips. Sufficient leaves should be partially covered to provide one leaf to each pupil/group of pupils in the class.

7. The plants should be left in bright light for at least 24 hours before the investigation to ensure that there is sufficient starch produced.
8. Teachers should keep a sample or photograph of a trialled leaf so this can be shown to pupils if suitable results are not obtained. Drawing **must not** be provided by the teacher.

## Task 2: Estimating the energy content of crisps

It is the responsibility of the centre to ensure that an appropriate risk assessment is carried out for this investigation.

### Apparatus and materials (per group)

- Safety glasses
- Retort stand
- Bosshead and clamp
- Heatproof mat
- Bunsen burner
- Boiling tube
- Stirring rod
- Thermometer
- Measuring cylinder to measure 25 cm<sup>3</sup> of water
- Tongs
- Matches/lighter
- Water
- Crisps.

### Teacher Instructions

1. Teachers should trial the experiments in advance to ensure that appropriate sets of results can be obtained using the equipment and materials available to the centre.
2. As burning crisps produce smoke, schools need to follow normal procedures for extracting smoke.
3. Schools should follow normal procedures in the event of broken glass.
4. In trials half a Pringle provided good results.