

CIE Biology International A-level

Plan Experiments and Investigations

Practical Flashcards



State 5 components that should appear
in a practical plan.



State 5 components that should appear in a practical plan.

Controlled variables

Independent variable

Dependent variable

How to improve reliability

Safety



What is a controlled variable?



What is a controlled variable?

A variable that is kept constant in the practical.



What is the independent variable?



What is the independent variable?

A variable that is varied in the practical.



What is the dependent variable?



What is the dependent variable?

The variable that is measured in the practical.



How can reliability be improved in a practical?



How can reliability be improved in a practical?

Repeat the practical at least 3-5 times and take a mean value.

Identify and exclude anomalies.



What should be written about safety in a practical plan?



What should be written about safety in a practical plan?

State a hazard and the level of risk.

State a safety precaution to take.



What should be written about dependent variables in a plan?



What should be written about dependent variables in a plan?

Identify the dependent variable.

Describe how it is measured and the apparatus needed.



State 6 common controlled variables.



State 6 common controlled variables.

Temperature

Time

pH

Mass

Volume

Concentration



State 3 ethical concerns in a practical.



State 3 ethical concerns in a practical.

Minimise exposure to testing environments that may cause stress.

Gain consent before testing.

Allow participants to stop during the practical.



What is a source of error when measuring length and how can it be reduced?



What is a source of error when measuring length and how can it be reduced?

Parallax errors.

By using vernier callipers.



What are some important procedures to setting up a potometer?



What are some important procedures to setting up a potometer?

Make a slanted cut of the shoot underwater.

Make sure the apparatus is airtight.

Use syringe to adjust gas bubble position to starting point.



What are some important procedures to setting up a respirometer?



What are some important procedures to setting up a respirometer?

Make sure the apparatus is airtight.

Air must be replaced between each set-up.



Outline the procedure to random sampling.



Outline the procedure to random sampling.

Make a grid.

Use a random number generator to obtain sets of coordinates.

Place quadrats at coordinates.



Outline the procedure to a chromatography practical.



Outline the procedure to a chromatography practical.

Draw a pencil line on a piece of filter paper for the origin.

Use a capillary tube to drop the extract onto the origin. Dry and repeat.

Dip in solvent (do not go above pencil line). Cover solvent with bung to prevent evaporation.

After running the solvent, allow chromatography paper to dry and spray with dye.



What reagents can be used to measure the rate of respiration and photosynthesis?



What reagents can be used to measure the rate of respiration and photosynthesis?

Redox indicators.



Outline the procedure to preparing a squash slide.



Outline the procedure to preparing a squash slide.

Obtain required sample by cutting with scalpel/peeling with forceps.

Mount on a slide and add stain if necessary.

Squash by placing a cover slip on and pressing down gently.



What are the controlled variables for a practical investigating osmosis using plant tissue?



What are the controlled variables for a practical investigating water potential using plant tissue?

Time immersed in salt / sucrose solution.

Surface area of plant tissue.

Temperature.

Volume of salt / sucrose solution.

