

Internal Assessment Checklist for IB Biology: Analysis (Results)

Overall

- ___ Presented IN ORDER (and TITLED properly)
- ___ Everything is word processed
- ___ Data is presented so that all stages to the final result can be followed easily (logically, sequentially etc.)

Raw Data

- ___ ALL data is RECORDED ***INDIVIDUALLY***
- ___ Appropriate (relative) **qualitative** (non-numerical) data is recorded
- ___ Appropriate **quantitative** (numerical) data is recorded WITH ***UNITS*** (Note: Units must be in scientific (SI) format*)
- ___ ALL data is recorded in data tables
- ___ EACH data table is numbered
- ___ EACH data table has a SPECIFIC title (including the IV/ DV and genus/ species names of specimens where applicable)
- ___ EVERY **column** in each data table contains a **heading** (including proper units of measurement AND uncertainties where applicable)
- ___ Decimal places of uncertainties are CONSISTENT WITH (the same as) RAW DATA RECORDED
- ___ Each data table fits on ONE page (Note: if data tables extend to multiple pages they are re-titled and column headings are relabeled as well)
- ___ Absolutely **no** processed data (**calculated data**) is present in raw data tables

*International System of Base Units (SI) Table

Base Quantity	Name of Unit	Symbol of Unit
	SI Base Unit (Measured in)	
Length	meter	m
Area	square meter	m ²
Volume (dry)	cubic meter	m ³
Mass	gram	g
Time	second	s
Temperature	degree Celsius	°C
Amount of Substance	mole	mol
Liquid Volume	liter	L

*International System of Units (SI) Prefixes and Conversions Table

SI Prefix	Abbreviation	In words	Conversion (10^n)
kilo	k	thousand	10^3
hecto	h	hundred	10^2
deca	da	ten	10^1
deci	d	tenth	10^{-1}
centi	c	hundredth	10^{-2}
milli	m	thousandth	10^{-3}
micro	μ	millionth	10^{-6}
nano	n	billionth	10^{-9}
pico	p	trillionth	10^{-12}

Example Raw Data Tables

Table 1

Lengths of two plant tissues, potato (*Solanum tuberosum*) and apple (*Malus domestica*) after soaking in solutions of sucrose of different concentrations.

Sucrose solution / mol	Potato lengths (cm \pm 0.1 cm)					Apple lengths (cm \pm 0.1 cm)				
0.0	4.2	4.0	3.9	4.0	4.2	4.2	4.3	4.1	4.3	4.4
0.2	4.0	3.8	4.2	4.1	4.1	4.1	4.2	4.2	4.1	4.2
0.4	3.8	3.7	3.7	3.7	3.8	4.1	4.2	4.3	4.2	4.2
0.6	3.8	3.7	3.7	3.8	3.6	4.0	4.0	4.1	4.1	4.0
0.8	3.6	3.5	3.7	3.7	3.5	4.1	4.0	3.9	3.9	4.0
1.0	3.7	3.6	3.7	3.7	3.6	3.8	4.0	4.0	3.8	3.9

Note: The initial lengths of all tissues were 4.0 cm (+/-0.1 cm).

Table 2

Qualitative observations of two plant tissues, potato (*Solanum tuberosum*) and apple (*Malus domestica*) after soaking in solutions of sucrose of different concentrations.

Observation Number	Description
1	It was noticed before the soaking that the potato tissue floated in the solution from 0.4 mol to 1.0 mol.
2	The apple tissue only floated in the solutions from 0.6 mol to 1.0 mol.
3	After soaking all the tissues became softer at higher sucrose concentrations but they were quite hard in the lower concentrations.

Calculations

- ___ Calculations are appropriate (mathematically and statistically)
- ___ Calculations are RELEVANT (allow for accurate/ complete interpretation of results obtained and fulfillment of the purpose of investigation)
- ___ Calculations are performed correctly and accurately
- ___ Calculations are performed and presented in logical order
- ___ **EACH** calculation includes a **title, formula** (word or numerical), and **complete example worked out with an answer** (with appropriate SI units, uncertainties, and consistent decimal places)
- ___ Calculations are presented (following a title, formula, and example calculation) in **data tables**
- ___ EACH data table is *numbered*
- ___ EACH data table has a SPECIFIC title
- ___ EVERY column in each data table contains a heading (including proper units of measurement AND uncertainties where applicable)
- ___ Decimal places of all processed data and uncertainties are CONSISTENT WITH (the same as) RAW DATA RECORDED
- ___ Each data table fits on ONE page and IMMEDIATELY follows the corresponding sample calculation (with title and formula)

Example Calculations

Calculation #1: The total number of each type of corn kernel counted

Formula: Kernels in Row 1 + Kernels in Row 2 + Kernels in Row 3 + ... Kernels in Row n

Example Calculation: The total number of blue, round kernels counted =
 $3 + 4 + 7 + 6 + 4 + 4 + 5 + 3 + 5 = 41$ blue, round kernels (+/- 1)

Data Table #3: The total number of each type of corn kernel counted

Type of Corn Kernel	Total number of kernels counted (+/-1)
Blue, round	41
Blue, wrinkled	37
Orange, round	35
Orange, wrinkled	16

Calculation #2: The total number of corn kernels counted

Formula: Add the total numbers of each type of kernel counted together

Example Calculation: $41 + 37 + 35 + 16 = 129$ kernels (+/-1)

Data Table #4: The total number of corn kernels counted

Total number of corn kernels counted	129 (+/-1)
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Calculation #3: Percent of total of each type of corn kernel counted

Formula: (Total number of specific type of kernel counted / total number of kernels counted) x 100

Example Calculation: Percent of blue, round kernels on cob= $(41 / 129) \times 100 = 31.8\%$
blue, round kernels (+/- 0.1)

Data Table #5: Percent of total of each type of corn kernel counted

Type of Corn Kernel	% of Total Kernels (+/-0.1)
Blue, round	31.8
Blue, wrinkled	28.7
Orange, round	27.1
Orange, wrinkled	12.4

Graph(s)

- ___ Graphs display calculated data
- ___ Graphs are displayed in APPROPRIATE graphical format (refer to **graphing data** and **mathematics/ ICT skills** documents on website)
- ___ Each graph is presented in logical order (SAME ORDER AS CALCULATIONS)
- ___ EACH graph has a specific title
- ___ EACH graph is numbered
- ___ Axes of graphs are SPECIFICALLY LABELED (names, SI units, AND uncertainties)
- ___ Decimal places of ALL numbers in graphs are CONSISTENT WITH (the same as) raw and processed data
- ___ Graphs have appropriate scales (and keys where applicable)
- ___ Graphs that require color to interpret are PRINTED IN COLOR
- ___ Data points (where applicable) are plotted accurately with a suitable best-fit line or curve