**Welcome to IB Biology and your Summer Assignment!**

**Your Summer assignment has 5 components:**

**Assignment 1**: Sign up for Remind.com texting service. Please use your full name.

**Due Date:** June 10, 2017

**To:**

**Message:**

@kk28da

Enter this number

Text this message

81010

To receive messages via text, text **@kk28da** to **81010**. You can opt out of messages at anytime by replying, 'unsubscribe @kk28da.

Trouble using 81010? Try texting **@kk28da** to **(904) 201-8112** instead

**Assignment 2:** Draft an e-mail to me (debra.tewey@stjohns.k12.fl.us) with the following information:

**Due Date**: August 01, 2017

* Your name and any other name you like to go by
* Your interests (hobbies, sports, music, etc…)
* Your career and college aspirations
* Your perception of your learning style (how do you learn the best)
* What are looking forward to the most in IB Biology?
* What are you most anxious about in IB Biology?
* Anything else you think I should know….

**Assignment 3:** Make flashcards of the IB command terms and be prepared for a quiz.

* You must have all IB command terms handwritten on 3x5 index cards on the first day of school and be prepared for quiz.
* IB terms are found on pages 4-5.

**Assignment 4:** Using the IB ***guidance for the use of the internal assessment criteria – personal engagement and exploration;*** you are going to complete the IA **Design** portion only, but all three aspects in the design must be completed.

 **Due Date:** August 10, 2017, send to Turnitin.com

* Design a lab based on diffusion. The research question should include your independent variable, dependent variable and its effect on diffusion. Example: How does changing the color of Smarties affect the extent of its passive diffusion? (You can’t use this one!)
	+ This lab should be your own, original work.
	+ This lab should be creative.
	+ This lab should be created so that it could be tested (if necessary) in the classroom.
	+ Aspect 2 – this lab should include “how” you kept all variables precise.
		- Keep in mind the following chart:

|  |  |
| --- | --- |
| Variables | How is it being controlled? |
| Independent variable – the factor one can manipulate |  |
| Dependent variable – the factor that responds  |  |
| Control variable – without the independent variable |  |

* + Aspect 3 – this lab should include the procedure. YOU must indicate that a total of 5 trials need to be run so enough data can be measured.
	+ This lab should have an accurate data table set up “as if” you are going to run the lab. Remember the 5x5 rule; you must set up your lab with 5 variations of your independent variable and you must run 5 separate trials (examples: changing pH levels 2,3,4,5,6 or changing temperatures 15°C, 16°C, 17°C, 18°C, 19°C)
	+ YOU will NOT run this lab, you are just designing a lab with correct procedures. Remember that all labs should be designed to be repeatable.
* Site your sources in and use biological sources - not wiki.
	+ Use MLA format
* Submit your lab into turnitin.com the first week of school.
	+ [www.turnitin.com](http://www.turnitin.com)
	+ classID: 15390592
	+ Enrollment key: Biology2019
* Additional IA criteria and IA format is found on page 6-12.

**Component #5 - IMPORTANT!!!!!!**

It is **highly recommended** that all students purchase the following study guide within the first 2 weeks of school. You can purchase the Oxford Study Guide at cost through Mrs. Tewey or the Media Center.



**We will use 2 textbooks. One textbook is Biology by Campbell (8th Edition), the other is HL Biology Pearson Baccalaureate (2nd Edition); both books will be provided to you through Nease media center. Purchase is not necessary but optional.**

**Product Details for Campbell**



**Product Details**

* ISBN-13: 9781447959007
* Publisher: Pearson
* Publication date: 10/10/2014
* Edition description: New Edition
* Edition number: 2



**Command Terms for IB Biology**

***Objective 1***

**Define -** Give the precise meaning of a word, phrase or physical quantity.

**Draw -** Represent by means of pencil lines.

**Label -** Add labels to a diagram.

**List -** Give a sequence of names or other brief answers with no explanation.

**Measure -** Find a value for a quantity.

**State -** Give a specific name, value or other brief answer without explanation or calculation.

***Objective 2***

**Annotate -** Add brief notes to a diagram or graph.

**Apply -** Use an idea, equation, principle, theory or law in a new situation.

**Calculate -** Find a numerical answer showing the relevant stages in the working (unless instructed not to do so).

**Describe -** Give a detailed account.

**Distinguish -** Give the differences between two or more different items.

**Estimate -** Find an approximate value for an unknown quantity.

**Identify -** Find an answer from a given number of possibilities.

**Outline -** Give a brief account or summary.

***Objective 3***

**Analyze -** Interpret data to reach conclusions.

**Comment -** Give a judgment based on a given statement or result of a calculation.

**Compare -** Give an account of similarities and differences between two (or more) items, referring to both (all) of them

 throughout.

**Construct -** Represent or develop in graphical form.

**Deduce -** Reach a conclusion from the information given.

**Derive -** Manipulate a mathematical relationship(s) to give a new equation or relationship.

**Design -** Produce a plan, simulation or model.

**Determine -** Find the only possible answer.

**Discuss -** Give an account including, where possible, a range of arguments for and against the relative importance of

 Various factors, or comparisons of alternative hypotheses.

**Evaluate -** Assess the implications and limitations.

**Explain -** Give a detailed account of causes, reasons or mechanisms.

**Predict -** Give an expected result.

**Show -** Give the steps in a calculation or derivation.

**Sketch -** Represent by means of a graph showing a line and labelled but unscaled axes but with important features (for

 example, intercept) clearly indicated.

**Solve -** Obtain an answer using algebraic and/or numerical methods.

**Suggest -** Propose a hypothesis or other possible answer.

***Guidance for the use of the internal assessment criteria***

**Personal engagement**

The emphasis within this section is on individuality and creativity within the investigation. The question to ask is, has the chosen research question been devised as a result of the personal experience of the student? The question could be a result of observations made in the student’s own environment or ideas that the student has had as the result of learning, reading or experimenting in class. The investigation does not have to be ground-breaking research, but there should be an indication that independent thought has been put into the choice of topic, the method of inquiry and the presentation of the findings. The topic chosen should also be of suitable complexity. If the research question is very basic or the answer self-evident then there is little opportunity to gain full marks for exploration and analysis as the student will not have the opportunity to demonstrate his or her skills.

### Exploration

The issue here is the overall methodology. Students need to take their individual ideas and translate them into a workable method. Students must also demonstrate the thinking behind their ideas using their subject knowledge. The information given must be targeted at the problem rather than being a general account of the topic matter, in order to demonstrate focus on the issues at hand.

What needs to be seen is a precise line of investigation that can be assessed using scientific protocols. It is then expected that the student gives the necessary details of the method in terms of variables, controls and the nature of the data that is to be generated. This data must be of sufficient quantity and treatable in an appropriate manner, so that it can generate a conclusion, in order to fulfill the criteria of analysis and evaluation. If the method devised does not lead to sufficient and appropriate data, this will lead to the student being penalized in subsequent sections where this becomes the crux of the assessment.

Health and safety is a key consideration in experimental work and forms part of a good method. If the student is working with animals or tissue, it is reasonable to expect there to be evidence that the guidelines for the use of animals in IB World Schools have been read and adhered to. The use of human subjects in experiments is also covered by this policy. If the student is working with chemicals, some explanation of safe handling and disposal would be expected. Full awareness is when all potential hazards have been identified, with a brief outline given as to how they will be addressed. It is only acceptable for there to be no evidence of a risk assessment if the investigation is evidently risk-free—such as in investigations where a database or simulation has been used to generate the data.

### Analysis

At the root of this section is the data generated and how it is processed. If there is insufficient data then any treatment will be superficial. It is hoped that a student would recognize such a lack and revisit the method before the analysis is arrived at. Alternatively, the use of databases or simulations to provide sufficient material for analysis could help in such situations.

Any treatment of the data must be appropriate to the focus of the investigation in an attempt to answer the research question. The conclusions drawn must be based on the evidence obtained from the data rather than on assumptions. Given the scope of the internal assessment and the time allocated, it is more than likely that variability in the data will lead to a tentative conclusion. This should be recognized and the extent of the variability considered. The variability should be demonstrated and explained and its impact on the conclusion fully acknowledged. It is important to note that, in this criterion, the word “conclusion” refers to a deduction based on direct interpretation of the data, which is based on asking questions such as: What does the graph show? Does any statistical test used support the conclusion?

### Evaluation

Although it may appear that the student is asked to repeat the analysis of the data and the drawing of a conclusion again in the evaluation, the focus is different. Once again the data and conclusion come under scrutiny but, in the evaluation, the conclusion is placed into the context of the research question. So, in the analysis, it may be concluded that there is a positive correlation between x and y; in the evaluation, the student is expected to put this conclusion into the context of the original aim. In other words, does the conclusion support the student’s original thinking in the topic? If not, a consideration of why it does not will lead into an evaluation of the limitations of the method and suggestions as to how the method and approach could be adjusted to generate data that could help draw a firmer conclusion. Variability of the data may well be mentioned again in the evaluation as this provides evidence for the reliability of the conclusion. This will also lead into an assessment of the limitations of the method. It is the focus on the limitations that is at issue in the evaluation, rather than a reiteration that there is variability.

### Communication

The marking points for communication take the entire write-up into consideration. If a report is clearly written and logically presented there should be no need for the teacher to re-read it. The information and explanations should be targeted at the question in hand rather than being a general exposition of the subject area; in other words, the report should be focused. The vocabulary should be subject-specific and of a quality appropriate to diploma level. The subject-specific conventions that can be expected are the correct formats for graph and tables and cell headings, correct use of units and the recording of errors. This is not to say that the presentation needs to be faultless to gain full marks. Minor errors are acceptable as long as they do not have a significant bearing on understanding or the interpretation of the results.

**The internal assessment criteria**

The new assessment model uses five criteria to assess the final report of the individual investigation with the following raw marks and weightings assigned:

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| **Personal engagement**  |  **Exploration**  |  **Analysis**  |  **Evaluation**  |  **Communication**  |  **Total**  |
|  2 (8%) |  6 (25%) |  6 (25%) |  6 (25%) |  4 (17%) |  24 (100%) |

Levels of performance are described using multiple indicators per level. In many cases the indicators occur together in a specific level, but not always. Also, not all indicators are always present. This means that a candidate can demonstrate performances that fit into different levels. To accommodate this, the IB assessment models use markbands and advise examiners and teachers to use a **best-fit approach** in deciding the appropriate mark for a particular criterion.

Teachers should read the guidance on using markbands in the group 4 subject guides, in the section “Using assessment criteria for internal assessment” before starting to mark. It is also essential to be fully acquainted with the marking of the exemplars in the teacher support material. The precise meaning of the command terms used in the criteria can be found in the glossary of the subject guides.

**Personal engagement**

This criterion assesses the extent to which the student engages with the exploration and makes it their own. Personal engagement may be recognized in different attributes and skills. These could include addressing personal interests or showing evidence of independent thinking, creativity or initiative in the designing, implementation or presentation of the investigation.

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| Mark | Descriptor |
| 0 | The student’s report does not reach a standard described by the descriptors below. |
| 1 | **The evidence of personal engagement with the exploration is limited with little independent thinking, initiative or creativity.**The justification given for choosing the research question and/or the topic under investigation does not demonstrate **personal significance, interest or curiosity**.There is little evidence of **personal input and initiative** in the designing, implementation or presentation of the investigation. |
| 2 | **The evidence of personal engagement with the exploration is clear with significant independent thinking, initiative or creativity.**The justification given for choosing the research question and/or the topic under investigation demonstrates **personal significance, interest or curiosity**.There is evidence of **personal input and initiative** in the designing, implementation or presentation of the investigation. |

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**Exploration**

This criterion assesses the extent to which the student establishes the scientific context for the work, states a clear and focused research question and uses concepts and techniques appropriate to the Diploma Programme level. Where appropriate, this criterion also assesses awareness of safety, environmental, and ethical considerations.

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| Mark | Descriptor |
| 0 | The student’s report does not reach a standard described by the descriptors below. |
| 1-2 | The topic of the investigation is identified and a research question of some relevance is **stated but it is not focused**.The background information provided for the investigation is **superficial** or of limited relevance and does not aid the understanding of the context of the investigation.The methodology of the investigation is only appropriate to address the research question to a very limited extent since it takes into consideration few of the significant factors that may influence the relevance, reliability and sufficiency of the collected data.The report shows evidence of limited awareness of the significant safety, ethical or environmental issues that are **relevant to the methodology of the investigation**\*. |
| 3-4 | The topic of the investigation is identified and a relevant but not fully focused research question is described.The background information provided for the investigation is mainly appropriate and relevant and aids the understanding of the context of the investigation.The methodology of the investigation is mainly appropriate to address the research question but has limitations since it takes into consideration only some of the significant factors that may influence the relevance, reliability and sufficiency of the collected data.The report shows evidence of some awareness of the significant safety, ethical or environmental issues that are **relevant to the methodology of the investigation\***. |
| 5-6 | The topic of the investigation is identified and a relevant and fully focused research question is clearly described.The background information provided for the investigation is entirely appropriate and relevant and enhances the understanding of the context of the investigation.The methodology of the investigation is highly appropriate to address the research question because it takes into consideration all, or nearly all, of the significant factors that may influence the relevance, reliability and sufficiency of the collected data.The report shows evidence of full awareness of the significant safety, ethical or environmental issues that are **relevant to the methodology of the investigation\***. |

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\* This indicator should only be applied when appropriate to the investigation. See exemplars in TSM.

**Analysis**

This criterion assesses the extent to which the student’s report provides evidence that the student has selected, recorded, processed and **interpreted** the data in ways that are relevant to the research question and can support a conclusion.

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| Mark | Descriptor |
| 0 | The student’s report does not reach a standard described by the descriptors below. |
| 1-2 | The report includes **insufficient relevant** raw data to support a valid conclusion to the research question.Some **basic** data processing is carried out but is either too **inaccurate or too insufficient to lead to a valid** conclusion.The report shows evidence of little consideration of the impact of measurement uncertainty on the analysis.The processed data is incorrectly or insufficiently interpreted so that the conclusion is invalid or very incomplete |
| 3-4 | The report includes relevant but incomplete quantitative and qualitative raw data that could support a simple or partially valid conclusion to the research question.Appropriate and sufficient data processing is carried out that could lead to a broadly valid conclusion but there are significant inaccuracies and inconsistencies in the processing.The report shows evidence of some consideration of the impact of measurement uncertainty on the analysis.The processed data is interpreted so that a broadly valid but incomplete or limited conclusion to the research question can be deduced. |
| 5-6 | The report includes sufficient relevant quantitative and qualitative raw data that could support a detailed and valid conclusion to the research question.Appropriate and sufficient data processing is carried out with **the accuracy** required to enable a conclusion to the research question to be drawn that is fully **consistent** with the experimental data.The report shows evidence of full and appropriate consideration of the impact of measurement uncertainty on the analysis.The processed data is correctly interpreted so that a completely valid and detailed conclusion to the research question can be deduced. |

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**Evaluation**

This criterion assesses the extent to which the student’s report provides evidence of evaluation of the investigation and the results with regard to the research question and the accepted scientific context.

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| Mark | Descriptor |
| 0 | The student’s report does not reach a standard described by the descriptors below. |
| 1-2 | A conclusion is **outlined** which is not relevant to the research question or is not supported by the data presented.The conclusion makes superficial comparison to the accepted scientific context.Strengths and weaknesses of the investigation, such as limitations of the data and sources of error, are **outlined** but are restricted to an **account** of **the practical** or **procedural issues** faced.The student has **outlined** very few realistic and relevant suggestions for the improvement and extension of the investigation. |
| 3-4 | A conclusion is **described** which is relevant to the research question and supported by the data presented.A conclusion is described which makes some relevant comparison to the accepted scientific context.Strengths and weaknesses of the investigation, such as limitations of the data and sources of error, are **described** and provide evidence of some awareness of the **methodological issues\*** involved in establishing the conclusion.The student has **described** some realistic and relevant suggestions for the improvement and extension of the investigation. |
| 5-6 | A detailed conclusion is **described and justified** which is entirely relevant to the research question and fully supported by the data presented.A conclusion is correctly **described and justified** through relevant comparison to the accepted scientific context.Strengths and weaknesses of the investigation, such as limitations of the data and sources of error, are **discussed** and provide evidence of a clear understanding of the **methodological issues**\* involved in establishing the conclusion.The student has **discussed** realistic and relevant suggestions for the improvement and extension of the investigation. |

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\*See exemplars in TSM for clarification.

**Communication**

This criterion assesses whether the investigation is presented and reported in a way that supports effective communication of the focus, process and outcomes.

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| Mark | Descriptor |
| 0 | The student’s report does not reach a standard described by the descriptors below. |
| 1-2 | **The presentation of the investigation is unclear, making it difficult to understand the focus, process and outcomes.**The report is not well structured and is unclear: the necessary information on focus, process and outcomes is missing or is presented in an incoherent or disorganized way.The understanding of the focus, process and outcomes of the investigation is obscured by the presence of inappropriate or irrelevant information.There are many errors in the use of subject-specific terminology and conventions\*. |
| 3-4 | **The presentation of the investigation is clear. Any errors do not hamper understanding of the focus, process and outcomes**.The report is well structured and clear: the necessary information on focus, process and outcomes is present and presented in a coherent way.The report is relevant and concise thereby facilitating a ready understanding of the focus, process and outcomes of the investigation.The use of subject-specific terminology and conventions is appropriate and correct. Any errors do not hamper understanding. |

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