**IB Biology I – Graph Analysis Practice #1 Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. **Complete a detail conclusion based on the graphs below (include 5 detailed statements about each graph).**

A study was carried out to determine the relationship between the diameter of a molecule and its movement through a membrane. The graph below shows the results of the study.



Conclusion:

..........................................................................................................................................................

..........................................................................................................................................................

..........................................................................................................................................................

...........................................................................................................................................................

..........................................................................................................................................................

...........................................................................................................................................................

............................................................................................................................................................

............................................................................................................................................................

.............................................................................................................................................................

............................................................................................................................................................

.............................................................................................................................................................

.............................................................................................................................................................

..............................................................................................................................................................

..............................................................................................................................................................

1. Seed dispersal is important in the migration of plants from one area to another area. Plants have evolved many methods, both physical and biological, by which to disperse their seeds.

 50 maple seeds, which are wind dispersed, were dropped one at a time from two different heights, 0.54 m and 10.8 m respectively. The histograms below show the distribution of the distance the maple seeds travelled.



Conclusion:

..........................................................................................................................................................

..........................................................................................................................................................

..........................................................................................................................................................

...........................................................................................................................................................

..........................................................................................................................................................

...........................................................................................................................................................

............................................................................................................................................................

............................................................................................................................................................

.............................................................................................................................................................

............................................................................................................................................................

.............................................................................................................................................................

.............................................................................................................................................................

..............................................................................................................................................................

**IB Biology I – Graph Analysis Practice #1 Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. **Complete a detail conclusion based on the graph below**.

A study was carried out to determine the relationship between the diameter of a molecule and its movement through a membrane. The graph below shows the results of the study.



* **The larger molecular diameter the lower the ability to move through a membrane**
* **The smaller the molecular diameter the greater ability to move through a membrane**
* **The size of diameter of a molecule determines ability to move through a membrane**
* **Comparison of molecular diameter and relative ability to move through a membrane**
* **Negative correlation of raw data**
* **Molecule with diameter of .3 nm has a better ability to move through a membrane than a molecule with the diameter of 1.6 nm**
* **The molecular diameter is measure in nanometers**

Seed dispersal is important in the migration of plants from one area to another area. Plants have evolved many methods, both physical and biological, by which to disperse their seeds.

 50 maple seeds, which are wind dispersed, were dropped one at a time from two different heights, 0.54 m and 10.8 m respectively. The histograms below show the distribution of the distance the maple seeds travelled.



* **the greater the height from which the seed fell, the further it travelled from the parent plant**
* ***at the greater height:***
	+ - **seed can catch the wind to travel further / updrafts /
		more wind at greater height**
		- **farther to the ground and does not travel straight down / more time to be blown before hitting the ground**
* ***at lower height*:**
	+ - **seed can fall straight down;**
		- **seed can hit downdraft and fall faster;**

**IB Biology I – Graph Analysis Practice #2 Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. **Make two graphs with the following experiment information (simple and facilitated diffusion).**

A second study was carried out to investigate the effect of passive protein channels on the movement of glucose into cells. The raw data below shows the rate of uptake of glucose into erythrocytes by simple diffusion and facilitated diffusion.

**Simple diffusion**

|  |  |
| --- | --- |
| Rate of glucose uptake (mmole/cm3hour) | External concentration of glucose (mmole/dm3) |
| **10** | **1** |
| **12** | **2** |
| **15** | **3** |
| **20** | **4** |
| **22** | **5** |
| **25** | **6** |
| **29** | **7** |
| **30** | **8** |
| **33** | **9** |
| **37** | **10** |
| **40** | **11** |
| **43** | **12** |
| **45** | **13** |
| **49** | **14** |
| **50** | **15** |

**Facilitated diffusion**

|  |  |
| --- | --- |
| Rate of glucose uptake  | External concentration of glucose  |
| **50** | **1** |
| **80** | **2** |
| **110** | **3** |
| **150** | **4** |
| **170** | **5** |
| **200** | **6** |
| **220** | **7** |
| **250** | **8** |
| **270** | **9** |
| **290** | **10** |
| **300** | **11** |
| **330** | **12** |
| **370** | **13** |
| **410** | **14** |
| **460** | **15** |

1. **Complete a detail conclusion based on the data above and graph (include 6 detailed statements about each graph).**

Conclusion:

..........................................................................................................................................................

..........................................................................................................................................................

..........................................................................................................................................................

...........................................................................................................................................................

..........................................................................................................................................................

...........................................................................................................................................................

............................................................................................................................................................

............................................................................................................................................................

.............................................................................................................................................................

............................................................................................................................................................

.............................................................................................................................................................

............................................................................................................................................................

**IB Biology I – Graph Analysis #3 Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. **Make a graph with the following experiment information.**

A greenhouse built in the Arizona desert in the USA, has been used to study five different ecosystems. It is a closed system so measurements can be made under controlled conditions. The effects of different factors, including changes in carbon dioxide concentration in the greenhouse, were studied. The data shown below were collected over the course of one day in January 1996.

**Ecosystem #1**

|  |  |
| --- | --- |
| Concentration of CO2 (ppm) | Time (hours) |
| **810** | **2** |
| **840** | **4** |
| **885** | **6** |
| **910** | **8** |
| **990** | **10** |
| **1100** | **12** |
| **1200** | **14** |
| **980** | **18** |
| **910** | **20** |
| **880** | **22** |
| **800** | **24** |

**Ecosystem #2**

|  |  |
| --- | --- |
| Concentration of CO2 (ppm) | Time (hours) |
| **0** | **2** |
| **0** | **4** |
| **0** | **6** |
| **0** | **8** |
| **110** | **10** |
| **440** | **12** |
| **990** | **14** |
| **740** | **18** |
| **430** | **20** |
| **210** | **22** |
| **0** | **24** |

1. **Complete a detail conclusion based on the data above and graph (include 3 detailed statements about each graph)**

..........................................................................................................................................................

..........................................................................................................................................................

..........................................................................................................................................................

...........................................................................................................................................................

..........................................................................................................................................................

...........................................................................................................................................................

............................................................................................................................................................

............................................................................................................................................................

...........................................................................................................................................................



1. **Complete a detail conclusion based on the data above and graph (include 2 detailed statements about each graph).**

..........................................................................................................................................................

..........................................................................................................................................................

..........................................................................................................................................................

...........................................................................................................................................................

..........................................................................................................................................................

...........................................................................................................................................................

............................................................................................................................................................

**IB Biology I – Graph Analysis #3 RETAKE Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. **Make a graph with the following experiment information.**

A second study was carried out to investigate the effect of protein channels on the movement of lactase into cells. The raw data below shows the rate of uptake of lactase into cells by active transport and passive transport.

**Active Transport**

|  |  |
| --- | --- |
| Rate of lactase uptake (mmole/dm3hour) | External concentration of enzyme lactase (mmole/cm3) |
| **1** | **1** |
| **2** | **2** |
| **5** | **3** |
| **10** | **4** |
| **32** | **5** |
| **35** | **16** |
| **39** | **17** |
| **50** | **28** |
| **53** | **29** |
| **67** | **30** |
| **70** | **41** |
| **83** | **42** |
| **85** | **53** |
| **99** | **64** |
| **100** | **75** |

**Passive transport**

|  |  |
| --- | --- |
| Rate of lactase uptake  | External concentration of enzyme lactase (mmole/cm3) |
| **50** | **1** |
| **90** | **2** |
| **100** | **3** |
| **120** | **4** |
| **140** | **5** |
| **190** | **6** |
| **220** | **7** |
| **230** | **8** |
| **250** | **9** |
| **299** | **10** |
| **300** | **11** |
| **310** | **12** |
| **330** | **13** |
| **410** | **14** |
| **460** | **15** |

1. **Complete a detail conclusion based on the data above and graph (include 7 detailed statements about each graph).**

...........................................................................................................................................................................

............................................................................................................................................................................

..........................................................................................................................................................

...........................................................................................................................................................

..........................................................................................................................................................

...........................................................................................................................................................

............................................................................................................................................................

............................................................................................................................................................

.............................................................................................................................................................

............................................................................................................................................................

.............................................................................................................................................................

...........................................................................................................................................................