



Name: \_\_\_\_\_

Section: \_\_\_\_\_

Date: \_\_\_\_\_

## MEASURING LIGHT IN THE CLOUD FOREST

### Quantity of Light and Plant Growth

#### **Observations**

Watch the two *Canopy In The Clouds* videos presented by your teacher. Listen to the scientist and record the amount of sunlight reaching each location within the cloud forest. Record your findings below.

Mid elevation forest understory: \_\_\_\_\_

Mid elevation forest canopy: \_\_\_\_\_

#### **Scientific Question**

How does the amount of sunlight available affect plant growth in the cloud forest?

#### **Hypothesis**

Based on your observations, write a hypothesis for the scientific question. Remember to use the form “I predict.....because....”.

#### **Procedure**

- 1) Get a clear measurement square from your teacher.
- 2) Go to the mid elevation forest understory (Panorama #2) and select the Natural Scene. Record the total units of sunlight available, as seen in your observations.
- 3) Randomly select ten locations within the understory to place the measurement square on.  
\*\*Avoid locations that include large amounts of sky or large tree trunks that are close proximity. You may use locations on the ground.\*\*
- 4) At each location, determine the percentage of your square that is covered in green plant growth. Your entire measurement square represents 100%. It has been divided into four smaller squares (25% each) to help your estimations.  
\*\*Epiphytes growing on tree trunks count as green plant growth, but bare tree trunks do not.\*\*
- 5) Record your data in the data table under “My Group”.
- 6) Once you have collected ten data pieces, share data with other groups. Write their data in the columns labeled “Group #1”, “Group #2” and “Group #3”.
- 7) Calculate the average of all the data pieces.
- 8) Repeat procedure steps 1-7 for the mid elevation forest canopy.



Name: \_\_\_\_\_

Section: \_\_\_\_\_

Date: \_\_\_\_\_

**Data Table**

Data #	Percent Filled with Green Plant Growth							
	Mid Elevation Understory				Mid Elevation Canopy			
	Units of sunlight:				Units of sunlight:			
	My Group	Group #1	Group #2	Group #3	My Group	Group #1	Group #2	Group #3
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
Sum of each group								
Sum of all groups								
Average								



Name: \_\_\_\_\_

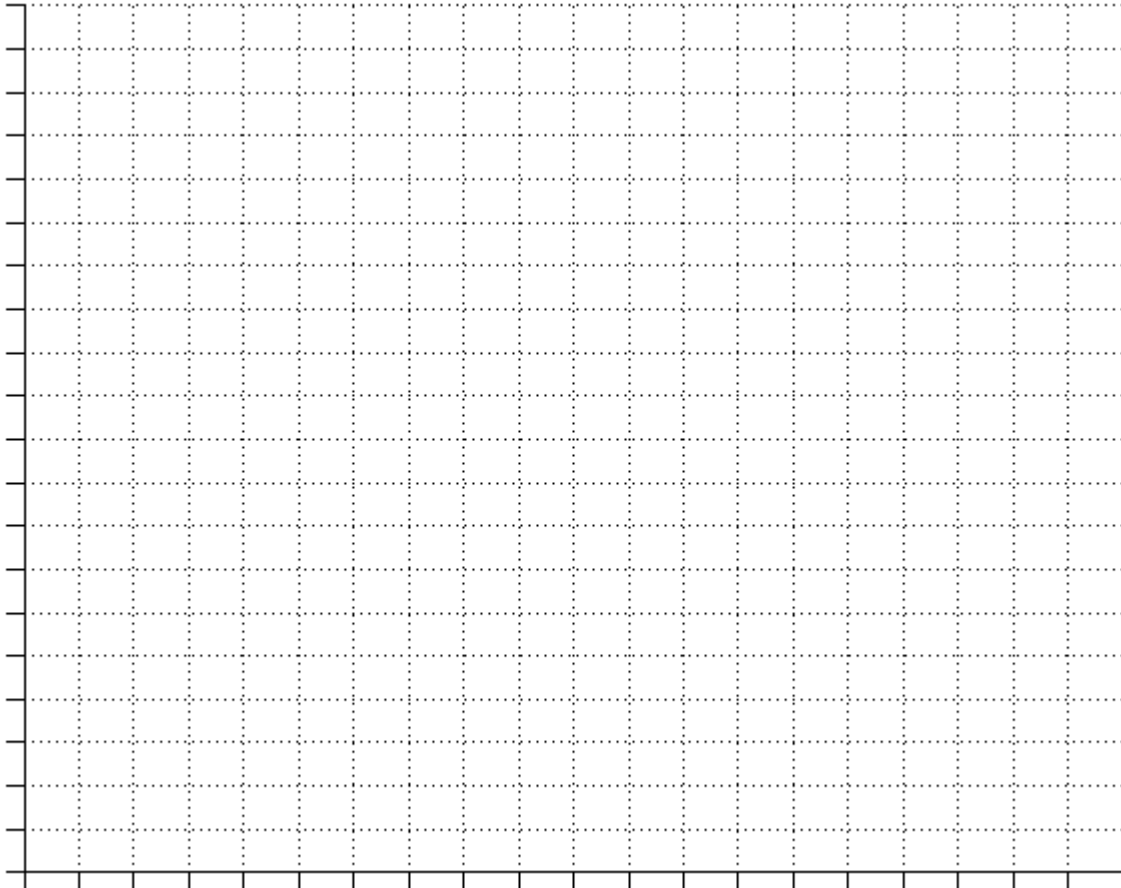
Section: \_\_\_\_\_

Date: \_\_\_\_\_

## Graph

Create your graph below. Don't forget to include:

- Title & Legend
- Locations along x-axis
- Evenly spaced percentage increments along y-axis
- Labels





Name: \_\_\_\_\_

Section: \_\_\_\_\_

Date: \_\_\_\_\_

## **Conclusion**

### *Part 1 → Mid Elevation Forest*

Using the data you have collected, write a conclusion that answers the scientific question. Discuss whether or not your hypothesis was supported, and your reasoning.

### *Part 2 → Light Gap (complete when instructed by your teacher)*

Now that you have collected three sets of data, answer the questions below.

- 1) Using previous data collected, write a hypothesis for the quantity of sunlight in the light gap. I predict that the light gap has.... units of sunlight because.....
- 2) How is the light gap location similar to or different from the mid elevation location of the cloud forest?
- 3) What is the role of sunlight in the cloud forest ecosystem? Why is it important?



Name: \_\_\_\_\_

Section: \_\_\_\_\_

Date: \_\_\_\_\_

## MEASURING LIGHT IN THE CLOUD FOREST

### Light Gap

1) Describe what a light gap is and how it forms.

2) Using the same procedure from the mid elevation forest, collect data from the light gap (Panorama #7, Natural Scene).

Data #	Percent Filled with Green Plant Growth			
	Light Gap			
	My Group	Group #1	Group #2	Group #3
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
Sum of each group				
Sum of all groups				
Average				

3) Add the data collected from the light gap to your graph.

4) Answer the questions given by your teacher in your conclusion.



Name: \_\_\_\_\_

Section: \_\_\_\_\_

Date: \_\_\_\_\_

### MEASURING LIGHT IN THE CLOUD FOREST Measurement Squares




Name: \_\_\_\_\_

Section: \_\_\_\_\_

Date: \_\_\_\_\_

**MEASURING LIGHT IN THE CLOUD FOREST**  
Student Assessment ~ High Elevation Site

***Directions:***

- 1) Examine the photograph of the understory below. This was taken at the high elevation site within the cloud forest.
- 2) Use your measurement square to determine the percent of plant growth in five different locations on the photograph. Calculate the average.
- 3) Using the data you collected regarding the sunlight available in the mid elevation site and the plant growth data, as well as the plant growth data from the light gap, answer the questions given.





Name: \_\_\_\_\_

Section: \_\_\_\_\_

Date: \_\_\_\_\_

### Data Table

Data #	Percent Filled with Green Plant Growth
	High Elevation Forest Understory
1	
2	
3	
4	
5	
Sum	
Average	

- 1) Based on the data you collected, how many units of sunlight do you believe are penetrating the understory of the high elevation forest site? Explain your answer.
  
- 2) How does the understory of the high elevation site compare with the understory of the mid elevation site?
  
- 3) How does the understory of the high elevation site compare with the light gap?
  
- 4) What other factors contribute to the growth of plants in forest ecosystems?