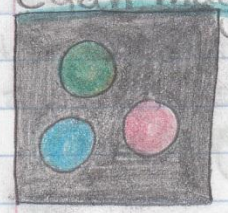
Why Plants are Green

Dec. 19 L.T. To use evidence of light energy absorption and reflection to determine why Plants are green.

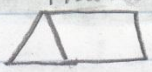
Hypothesis: If green, red and blue are reflected, and cyan, magenta and yellow are absorbed, Plants will be green.



Reflection: Bounce back

added lenzes

Absorb doesn't come back



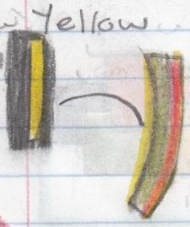
different colord Plexi glass Slides

Put the over head closer to the board

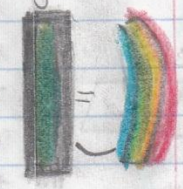
Red white light

yellow Yellow filter

green

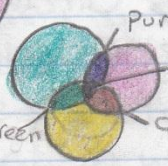


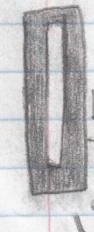
green



Red, yellow green blue darker.

Pieces of filter that were slid together





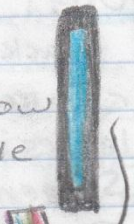
bar of white light

White light bent by prism

Triangular equilateral prism

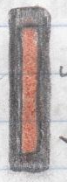
White light Red filter

Red orange yellow green blue purple



White light going through a blue filter

red makes red =



orange filter white light darker little green

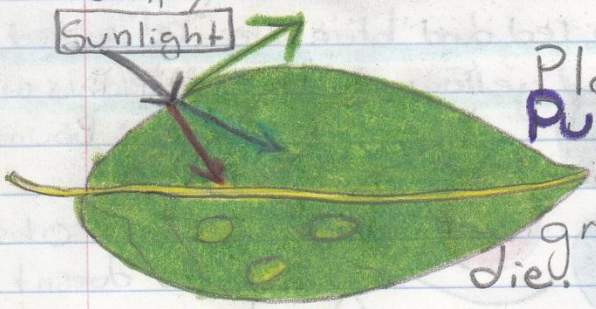
Purple

Red green blue

Red and blue filter made red)

Red yellow green

Plants are green because red and blue light are absorbed as the energy source of photosynthesis. Green light is simply reflected back to our eyes.



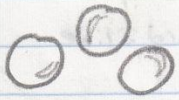
Plants grown in **Purple** (red + blue) light grow well. Plants grown in **green** light die!

Materials

Projecter

Black Slide w/ Slit in it

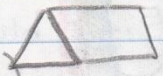
Colord Tiles



Lenses

Black Papper w/ Blue, Red, & green Circles

Plastic Triangular equlateral prism



Plastic Circles, (Cyan, Magenta, yellow.)

White Screen

Procedure

1. Put the Black papper w/ collord circles on the Projecter. Take notes.
2. Put the lenses on and move the projecter closer to the screen. Take notes.
3. Put the Plastic Circles on the Screen and move the projecter closer to the screen. Take notes.
4. Put the black slide w/ slit in it on the projecter.
5. Put the different Collord Slides on the front of the projecter. Take notes.

Observations Data Tabel

One	The light bent so the "Rainbow" was about 10 feet from the original Slide.
Two	The Cyan Magenta and yellow were almost see through.
Three	Yellow and Orange's Collors looked like Jamaica.
Four	Cyan Majenta and yellow would Obsorb the light
Five	Red Blue, and Green are Reflected.

Analysis

Pigment is a colored material that changes the color of substences. Rarfaction causes a prism to seperate a beam of white light into different colors. Using the evidence of light energy absorbtion and reflection we detirmined why plants are green. Chlorophyll absorbs and reflects different colors, and since because red and blue are absorbed as the energy source of photosynthesis, Green light is simply reflected back to our eye. The Red filter reflected red and obsorbed all the other colors (orange, yellow, green, blue, Purple) The orange filter reflected yellow and green and obsorbed or blue and purple. The yellow filter Red green and yellow and Obsorbed

blue and purple. The green filter reflected Red yellow green and blue and obsorbed orange and purple. The blue filter reflected Red green blue and purple, and obsorbed orange and yellow. The Red and Blue filter togetter reflected red and obsorbed orange yellow green blue & purple. Possible sources of error is that the colors I recorded may not be exact. It was hard to tell if orange was there or not. This lab can be transferd to other aplications because whenever I go to the Paint Stoor W/ my dad I will know why Certain colors look the way they do.

Conclusion

Evidence of light energy, absorbtion and reflection help determine why plants are green. I accept my hypothis that if green, red or blue are reflected, and cyan, magenta and yellow are obsorbed plants will be green. In this lab, I learned that colors in light are different than Paint. Now I wonder what would hapen if the colors magenta, cyan and yellow had lenzes. Since they allready melded togetter, I think that they would overshoot and end up on top of eachother.

Miss Amazing Science Student

Why Plants Are Green

Date Jan. 9/13 Period 4 Score 38/4

CATEGORY	4	3	2	1
Question/Purpose **Hypothesis** 3/4	The purpose / hypothesis portion includes a research-based description of the reasoning the predicted relationship is based on.	The purpose of the lab or the question to be answered during the lab is clearly identified and stated. The hypothesis clearly predicts the colors that either be reflected or absorbed by the green filter.	The purpose of the lab or the question to be answered during the lab is identified, but is stated in a somewhat unclear manner. The hypothesis does not display clear logic based on previous samples.	The purpose of the lab or the question to be answered during the lab is erroneous or irrelevant. The hypothesis is missing.
Materials **Procedures** 4/4 +	Exceptional detail.	All materials and setup used in the experiment are clearly and accurately described Procedures are listed in clear steps. Each step is numbered and is a complete sentence.	Almost all materials and the setup used in the experiment are clearly and accurately described. Procedures are listed in a logical order, but steps are not numbered and/or are not in complete sentences.	Many materials are described inaccurately Procedures do not accurately list the steps of the experiment and are difficult to follow
Note Point Values→	8	6	4	2
Drawings/Diagrams 8/8	Exceptional detail.	Clear, accurate diagrams are included and make the experiment easier to understand. Diagrams are labeled neatly and accurately.	Diagrams are included and are labeled. Attention to detail is lacking.	Needed diagrams are missing important details and labels.
Note Point Values→	4	3	2	1
Results: Observations 4/4	Exceptional detail. A data table was used to organize the observations.	At least 5 additional observations are included which describe details of the lab which are not included in the drawings.	3-4 additional observations are included which describe details of the lab which are not included in the drawings.	1-2 additional observation is included which describe details of the lab which are not included in the drawings.
Note Point Values→	12	9	6	3
Analysis: Identifies evidence of which colors are absorbed/reflected by chlorophyll 11/12	Additional thoughts about the data. Recognize and discuss cause and effect, relationships between variables. Evaluate possible sources of error Demonstrate "next level" thinking by identifying how this lab/data can be transferred to other applications	This paragraph clearly explains which colors appeared and which were absorbed by each filter. The discussion should include how reflection/absorption of light energy explains why plants are green.	This paragraph clearly explains which colors appeared with each filter but does not clearly identify how this evidence explains why plants are green.	This paragraph <u>does not clearly explain</u> why plants are green based on absorption.
Note Point Value	8	6	4	2
Conclusion 8/8	Conclusion also includes a logical extension (I wonder...) that explores related topics AND includes reasonable hypothetical responses to the "I wonder" question.	Conclusion includes a topic sentence which restates the purpose and whether the findings supported the hypothesis, a discussion of the hypothesis, and what was learned from the experiment.	Conclusion includes whether the findings supported the hypothesis and what was learned from the experiment.	Conclusion shows little effort and reflection.

38/40+10 = 3.8/4