Date
Jan 13

Topic

Signature

Window light VS. Cabinet Darkness:
How Plant Cell Convert light energy into food.

Arizona Standard: 7.L.2.1.12 - Construct an explantion for how some Plant Cells convert light energy into food energy. Catlyn L

Storyline: Plants have adaptations to live in different environments but ~~Plants~~ Can Plants survive without light?

The investigation Story
You've been hired as a Plant Scientist to answer an important question: Can Plants grow anywhere or do they need specific conditions to survive?
Two friends are arguing:
Maya says: "Plants can adapt to any enviroment. i bet they can grow in a dark cabinet!" Catlyn L
Jordan says: "no way! Plants need light to make food. Without light from a window, they'll die!"

Your mission: Design and conduct and experiment comparing Plant growth in window light verus inside a dark cabinet to determine who is correct and explain WHY based on how Plant Cells work.

UNIFIED SCHOOL DISTRICT #24 School Phone 928-802-2286

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Topic

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Date

Jan 19

After 7 days

	t window light Plant	Dark cabinet Plant	Cathyn L
Plant height	2.3	2	
Leaf development	1	1	
leaf stem color	Yellowish Pale	white	

Jan 26

	window light Plant	Dark cabinet Plant	cathyn L
Plant height	8	18.5	
leaf development	5	2	
color	medium green	Yellowish	

feb 03

	window light Plant	Dark cabinet Plant	cathyn L
Plant height	11	21.5	
leaf development	10	2	
color	Dark green	white yellow	

fedo1 "My experiment showed that Plants need sunlight to survive because Plant cells contain structures called Chloroplast that cotain chlorophyll to catch sunlight. In the Photosynthesis Process water + Co2 + sunlight produce O2 + glucose. The window light Plant was able to produce glucose because of the light energy from the Sun. However the cabinet Plant lack of sunlight This Proves that Plants need sunlight to survive." cathyn L

Date	Topic	Signature
Feb 05	Aside from Plant growth what other experiments that make Photosynthesis visable and measurable?	Caitlyn L

Feb 06

floating leaf Disk Lab

Step by Step Procedure

Purpose: to observe Photosynthesis in action by measuring how quickly Caitlyn L leaf disks float as they produce oxygen.

Pre test

Preparation of the materials gathering

Feb 07

Actual experiment

Caitlyn L

Part A: Preparation

Step 1: Select your spinach leaves

Step 2: Create leaf disks

Step 3: load the syringe

Part B: Removing the air (sinking process)

Step 4: Create Suction

Step 5: Release and repeat

Step 6: Transfer to Beaker

Part C: light exposure experiment

Step 7: Set up light source

Step 8: Start timer and observe

Step 9: Calculate ET_{50}

Part D: Dark Condition experiment

Step 10: remove light Source

Step 11: Observe Sinking

Date: feb 8

Topic: What's happening inside the leaf?

Signature: Caitlyn L

with light

- Light energy enters the leaf cells
- Photosynthesis occurs: $6CO_2 + 6H_2O + light \rightarrow Sugar + 6O_2$
- oxygen gas builds up inside the leaf disks
- oxygen makes the disks less dense
- Disks float to the surface

feb 9

Caitlyn L

without light

- Photosynthesis stops
- no new oxygen is produced
- oxygen diffuses out of the leaf disks
- Disks become denser again
- Disks sink back down

Date

Topic

Sig

Jan 13

- Window light Vs cabinet Dark! How plant cells convert light energy into Food

- Arizona standard 7.L2U1.1h - Construct an explanation for how some plant cells convert light energy into food energy.
- Storyline: Plants have adaptions to live in different environments - but can plants survive without light?

The Investigation Story

- You've been hired as a plant scientist to answer an important question: Can plants grow anywhere, even without light?

- Two friends are arguing!
  - Maya says: "Plants can adapt to any environment. I bet they can even grow in a dark cabinet!"
  - Jordan says: "No way! Plants need light to make food. Without it, they'll die."

Date
Jan 12th

Topic

Signature
AGreek

Your mission!

Design and construct an experiment comparing plant growth in window light versus inside a dark cabinet to determine who is correct and explain why based on how plant cells work.

Jan 19th

After 7 days

	Cabinet Plant	Window Plant
Height	3 cm	2.3 cm
# of leaves	2	1
leaf color	White	Yellowish pale

Photosynthesis helps the plant grow.

~~Jan 26th~~

Jan 26th

After 14 days

Cabinet	Window
18.5	8cm
2	5
Med. Green	Yellow-ish

(21)

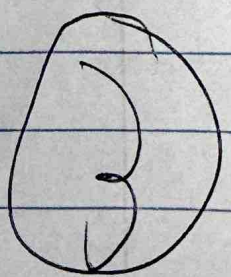
Date | Topic | Sig

Feb 03

	Cabinet	Window
Height	12.5	11 cm
# of leaves	9	10
Leave color	White Yellow	Dark Green

Feb 04 My experiment showed that plants need sunlight to survive. This happened because plant cells contain structures called chloroplasts that absorb the sunlight. In the photosynthesis process, Water, Carbon Dioxide, and Suhlight produce Oxygen and glucose. The window light plant was able to produce glucose and oxygen because of the energy from the sun

Feb 05 Aside from the plant growth experiment, what other experiments are available that make food using photosynthesis and makes it visible and measurable?



Date
Feb 06

Topic

Signature
NCreek

Floating leaf disk lab!
Step by step procedure

Purpose! To observe photosynthesis in action by measuring how quickly leaf disks float as they produce oxygen.

- Pre test
- Preparation of the gathering of the materials.

Feb 07

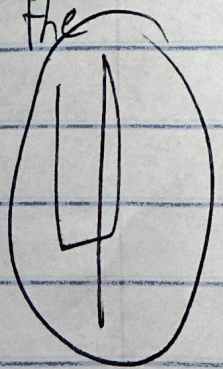
Actual Experiment

1) Select a healthy spinach leaves

2) Create leaf disks by punching holes in the spinach

3) Load the syringe with solution and 10 leaf disks.

4) Create a suction affect by plugging the tip and pulling the plunger back



5) Release and repeat.

(4)

Date
Feb 07

Topic

Signature
~~A Creek~~

6) Transfer your disks to your beaker ONCE THEY HAVE ALL SUNK!

7) Set up a light source

8) Start a timer and observe the number of floating disks each minut

9) Calculate the ET50, which is when half of your disks have started floating

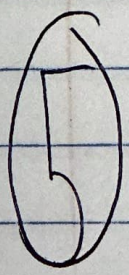
10) Move your beaker and cover it up fully.

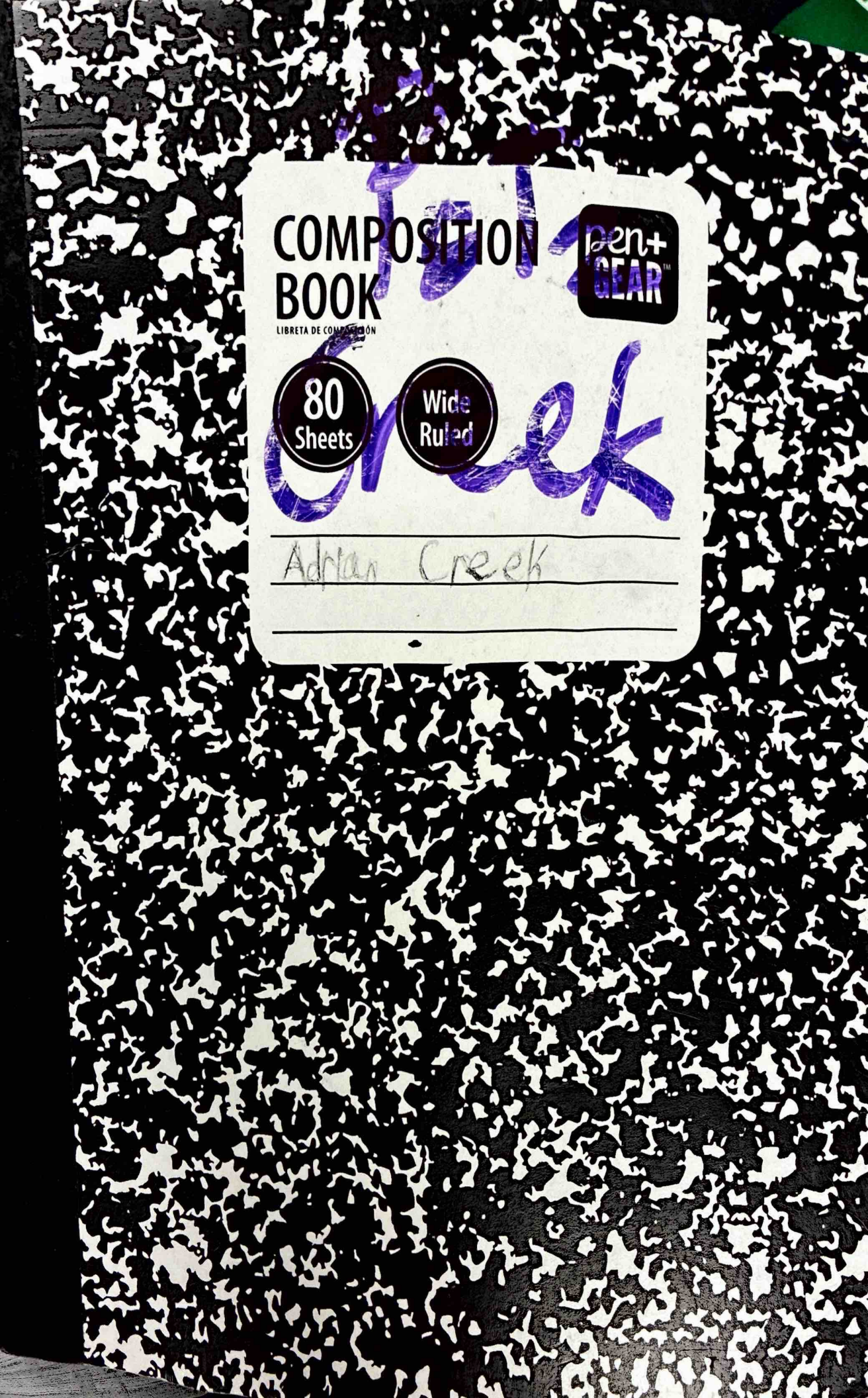
11) Observe how many disks sink/minute.

Feb 08 What happens inside the leaf?

With light:

- Light energy enters the leaf cells
- Photosynthesis occurs | $CO_2 + H_2O$ + Light → Sugar + O_2
- Oxygen gas builds up inside the leaf disks
- Oxygen makes the disks less dense
- Disks float to the surface

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