Fall Foliage Intro Lesson

## Objective:

SWBAT estimate the relative leaf color abundance in the field and record that data in a field notebook.

SWBAT pose questions for further study based on their observations of their surrounding environment.

### Warm Up (5 min)

* 1. What is a percent?

### Estimating Relative Leaf Color Abundance (15 min)

* 1. Students work on their google doc to estimate the relative leaf color abundance in each image.
     1. Only include leaves in the total 100%, not sky, roads, buildings, etc.

### Journal Prep (5 min)

* 1. Students prepare their field journal with a quick data table to collect leaf color data (use the table on google docs for guidance)

### Sit Spots (20 min)

* 1. Travel out to the terrace and each student finds a different spot at least 2 arms lengths away from peers
     1. Must be able to see trees and Mr. Rohn/Ms. Rogoff
  2. Students estimate and record relative leaf color abundance
     1. Should include all leaves in their field of vision without turning their head
     2. Challenge - students may try to create a pie chart for their data
  3. Students should spend the rest of the time observing their surroundings using the see-think-wonder thinking framework (printed sheet)
     1. See: observe
     2. Think: infer
     3. Wonder: ask a question (think of factors that could affect the changing leaves
        1. These could be testable scientific questions off the bat, we may need to work with them to define variables, or they may be great questions that might not necessarily be testable (either at all or with our limitations)

See Think Wonder Lesson

## Objective:

SWBAT identify and select a factor that could affect the changing leaf colors to research and/or test.

### Warm Up (5 min)

* 1. Make a copy of the data sheet (link on Canvas)
  2. Organize it in your science folder in drive

### Leaf Color Abundance (15 min)

* 1. Input data from notebook into sheets
  2. Create pie chart (try to make it look like the example with similar labels)
  3. Paste pie chart and data table in sheets
  4. Do not turn it it, I have access as long as it is added to the assignment
     1. We will turn it in after all our observations

### See - Think (15 min)

* 1. We are going to work up to asking a question about the fall foliage based on observations using our thinking framework See - Think - Wonder
  2. First, let’s share what we observed and inferred (See - Think)
     1. Mentimeter: Based on your observations outside, what did you SEE and THINK? You may submit multiple responses.
     2. EX: See - trees with different leaf shapes and sizes → Think - they must be different tree species

### Wonder (10 min)

* 1. Based on see and think, what factors that could affect the fall foliage do we wonder about?
     1. Factors are things that could be IVs. So things that we could change or measure the change in a natural setting to compare
     2. Mentimeter: word cloud for factors
        1. Submit at least 3; can be a few word phrase
     3. Be ready to narrow down and maybe choose which factor to focus your investigation on next class!

Leaf Color Factors Lesson

## Objective:

SWBAT identify and select a factor that could affect the changing leaf colors to research and/or test.

### Warm Up (5 min)

* 1. Write each factor you might want to investigate or test that could affect the changing leaf colors on a separate post it. Include your name
     1. Word cloud from last week displayed on the board

### Post Leaf Color Factors (10 min)

* 1. Post your factors in the appropriate “cloud” on the whiteboards around the room
     1. The clouds will start out blank and be filled with a single factor. Add yours to that cloud if you have the same (or similar enough) factor
        1. Find a different cloud if you have a different factor
  2. Check out all the clouds that get filled and choose one that you would most like to investigate. Stay by that cloud (bring your computer)

### Factor Research (25 min)

* 1. Read the article ([Science of Fall Colors](https://www.fs.fed.us/fallcolors/2015/science.shtml)) posted on Canvas for more information
  2. Turn your cloud into a web chart
     1. How does your chosen factor affect leaf color change?
     2. What could you measure about the factor? (IV)
     3. How could you measure the impact of the factor? (DV)
        1. Write a scientific question for your investigation
     4. What data would you need to collect in order to answer your question?

Leaf Color Factors Research Lesson

## Objective:

SWBAT research to identify what has already been studied about how their chosen factor affects the changing leaf colors.

SWBAT create a plan to collect data to begin to answer their question about their chosen factor.

### Warm Up (5 min)

* 1. Plot your sit spot coordinates on our [class map](https://www.google.com/maps/d/u/0/edit?mid=1yHTbH2DSt512Odce-YvAOuyeg8I&ll=42.31751848945012%2C-71.1648581&z=18)
  2. Type in your specific coordinates in the search bar (it will show up as a green pin)
  3. Find your coordinates for that pin on the left and click the “+” to add it to the map (it should be added to the “Sit Spots” layer
  4. On you pin (now blue), click the pencil to edit it and rename it “Your Name’s Sit Spot”

### Leaf Factor Scientific Questions (5 min)

* 1. In your science lab notebook, write a scientific question in proper format for your chosen factor that might affect leaf color
     1. Make sure to have specific and measurable variables (including for something about leaf color)

### Leaf Color Factors Research and Web Charts (15 min)

* 1. Continue creating a web chart to collect information regarding your factor
     1. What do you already know about how it affects leaf color (from research and/or experience)?
     2. What can you measure about the factor and/or leaf color change?
     3. What data do you need to collect in order to answer your scientific question?

### Data Collection Planning (20 min)

* 1. \*Make sure relevant plans get written in your lab notebook\*
  2. Look specifically at what you can measure and what data you need to collect to answer the question
     1. Plan how to collect that data next class when we go back to our sit spots
        1. Think back to writing a procedure for the penny drop lab. This should be a similar process.
           1. Only 1 IV
           2. How will you incorporate multiple measures of the IV?

Maybe take samples from a few different locations