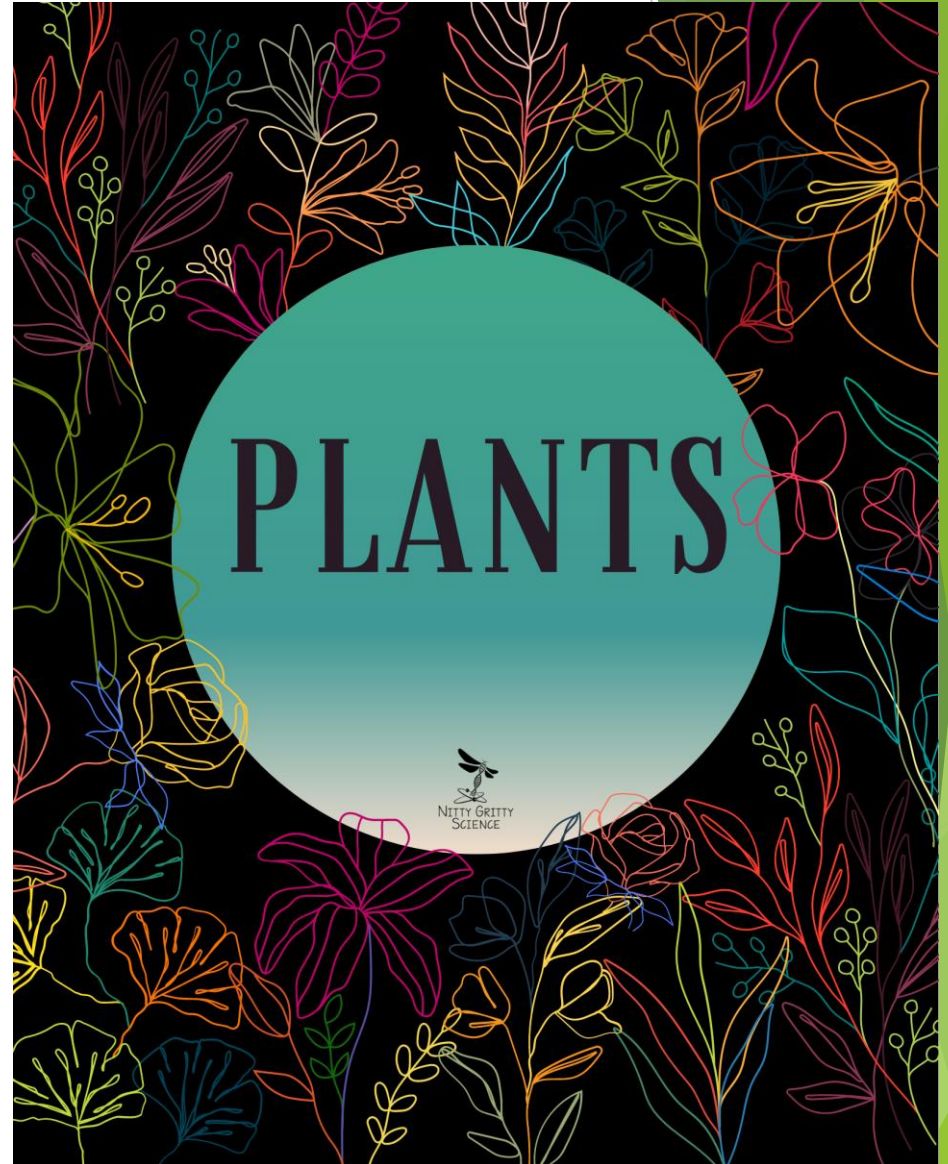


Plants



Plants Unit includes:

- Print and digital Interactive Notebooks
- Editable Resources including notes, PowerPoints, and test
- Instructional Videos
- Teacher-led Demos & Guided Inquiry Labs
- Task Cards & Digital Task Cards
- Study Guides





Suggested Pacing Guide



The following is a **suggested pacing guide** for my COMPLETE COURSES (Earth, Life or Physical Science) which are based on 50-minute class periods. There are three variations below. Each variation is based on the **number of sections in your SCIENCE INTERACTIVE NOTEBOOK chapter**.

Based on a **4-Section Chapter**

Day	Lesson/Activity	Engage	Explain	Explore	Elaborate	Evaluate
1	• Teacher Demo	x				
	• Section 1 Notes – INB input		x			
	• INB Activity – INB output (homework if not completed in class)			x		
2	• Mini-quiz					x
	• Section 2 Notes – use PowerPoint		x			
	• INB Activity			x		
3	• Mini-quiz					x
	• Guided Inquiry Lab – Student Led			x		
4	• Section 3 Notes – use PowerPoint		x			
	• INB Activity			x		
5	• Mini-quiz					x
	• Section 4 Notes – use PowerPoint		x			
	• INB Activity			x		
6	• Mini quiz					x
	• Science Stations				x	
7	• Science Stations				x	
8	• Final draft and testing for Creation Station (STEM)				x	x
9	• Task Card Review (game-style, full class, partner)				x	
10	• Chapter Test					x
	• Have students complete notes for next chapter*	x				

* **Note-taking option:** Once students are done with chapter test, they get the next set of notes and work quietly on completing them while other students finish up. All notes are to be completed when they return to class. Have students glue each page of notes into the next few pages of their INB (right side only). This way, when you go over the PowerPoint each day, they have already reviewed topic and are ready for class.

5 E Model

Engage – Teacher-led demos foster wonder and classroom discussion and serve as the hook for the lesson. Videos and images of natural phenomena also foster questioning and communication. NGSS phenomena are aligned to middle school NGSS standards.

Explain – PowerPoints, instructional videos, and guided notes (input side of interactive notebooks) provide definitions, explanations, and information through mini-lecture, text, internet, and other resources which encourages students to explain concepts and definitions in their own words.

Explore – Students investigate problems, events, or situations. As a result of their mental and physical involvement in these activities, students question events, observe patterns, identify and test variables, and communicate results.

Elaborate – It is important to involve students in further experiences that apply, extend, or elaborate the concepts, processes, or skill they are learning. Elaborate activities provide time for students to apply their understanding of concepts and skills. They might apply their understanding to similar phenomena or problems.

Evaluate – Use a variety of assessment to gather evidence of student's understanding and provide opportunities for them to assess their own progress.

Student Interactive Notebook



Each concept shares:

- Actual photos of both the INPUT and OUTPUT pages of Science Interactive Notebook
- Instructions on how to create/use/complete activity for OUTPUT side
- Mini-Quizzes for each concept to check students' understanding
- Answer Keys for all mini-quizzes
- Appendix with Teacher Notes for Interactive Notebook in LARGE print.

Section 1: The Plant Kingdom

In the Land of Fairies and Elves

Directions: You will need to go on a nature hunt in search for something special – evidence elves exist! This is a tricky task since Fairies and elves are very good at hiding their tracks from humans eyes.

For this assignment you will need to take pictures or sketch a minimum of NINE things from the Plant Kingdom that are used by Fairies and elves. You will need to identify the thing's structure name as well as the Fairy/Elf use. Remember, Fairies and elves live all over the world: in river, Faires, meadow elves, tree Fairies, desert F elves, etc. So be sure to look high, low, and everywhere! Be careful not to step on Fairy/Elf structures. The following examples are well known in the world.

Fairy/Elf Use	Transportation	Hint	Where
			(Young)

Fairy and Elf Evidence

Teacher Copy - Master Notebook

Name _____ Date _____

Quiz: The Plant Kingdom

Draw a line from the statement on the left that matches with the description on the right.

1. Plants need to obtain water and other nutrients.	A. Plants have adapted a waxy cuticle and stomata.
2. Plants need to support their bodies.	B. Plants have roots and shoots made of vascular tissue.
3. Plants need to maintain moisture.	C. Plants protect their gametes from drying out.
4. Plants need to reproduce.	D. Plants produce lignin.

Putting the Germination Dial Together

Directions:

1. Cut out all the parts of the Germination Dial.
2. On the top piece, cut the entire circle out. Then, cut the tabs on the slotted line but DO NOT cut the black circle. Fold tabs up and place through slots.
3. Place glue on TABS ONLY and paste the center piece on. The top piece of the dial should rotate easily.
4. Paste pictures of the germination cycle on the dial and match the picture that fits the description.

Name _____ Date _____

Quiz: Seed Plants

Matching

1. pollen grain	a. Flowering plants that reproduce by fruit
2. ovule	b. contains the male gamete
3. seed	c. ripened ovary of a flower
4. cotyledon	d. plants whose seeds are dispersed by wind
5. germination	e. structure which forms the embryo
6. gymnosperm	f. contains an embryo, seed leaves that surround the embryo
7. angiosperm	g. seed leaves that surround the embryo
8. Fruit	h. occurs when embryo is out of seed

Section 4: Flowering Plants

Instructions:

Students (and you) are going to not only have fun making this "Pop-up Flower" but will have just as much fun showing it off! By carefully putting the Flower together, students will learn the parts of the flower and will probably be making more than just one!

I highly recommend letting students (once they get the hang of) make a card out of one half of a sheet of paper and paste stamens and pistil on center and carefully place around stamens and pistil and glue each end to each side of the card. You could also take the extras and make a beautiful bulletin board display. Visual instructions, templates and a mini-quiz are all included for your use.

Flowering Plants

Directions: You will create a pop-up flower complete with petals, sepals, stamens and a pistil, which you will need to label once the flower is complete.

1. Cut out all flower template patterns.
2. Fold a paper in half the long way or "hot dog" style. Cut on fold so you have two separate pieces. Use different colors for instruction purposes, but it does make for a fun flower! Fold each piece in half the short way or "hamburger" style. Repeat this until you have a section the size of the flower petals.
3. Cut both folded halves using petal template and make a notch every other petal about 1/2 inch deep. Notice that one half has the notches starting from the top and the other half has the notches starting from the bottom.
4. Use the notches to slide the two halves together. Once together, fold flower accordion style.
5. Make a card out of one half of a sheet of paper and paste stamens and pistil on center and carefully place around stamens and pistil and glue each end to each side of the card.

Flower Templates

Flower Templates

Student Digital Notebook

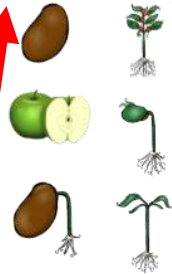
The student notebook is on Google Drive and ready for you to share with your students. Here's a quick overview of the features:

Set up like a traditional interactive notebook with input and output sides.

Hyperlinked tabs so student can easily move through chapter for review

Students watch video < 6 min to complete notes.

Directions: Click and drag the images of the germination cycle to the correct description.



Seed plants are divided into two groups:	
Gymnosperms	Angiosperms



Digital Textbook

For further exploration, click button(s) below:



Encouraging independent learners. Directions for output side are here along with what they need to complete the activity.

Notes are chunked into manageable sections with large spaces for textboxes

Some pages have links so students can go deeper into the topic if they need.

Demos, Labs, & Science Stations

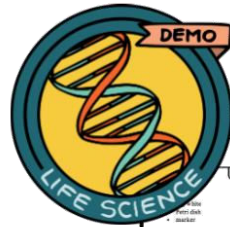
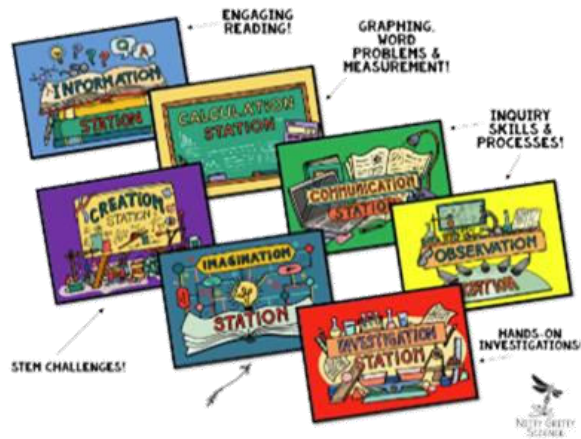


Working in the lab and being engaged in science experiments is the most exciting part of science.

Demo, Labs, and Science Stations Includes:

1. **SCIENCE STATION SIGNAGE** for all 7 stations is provided in color and in black and white (see preview) and all student answer sheets have icons that correspond with each station for ease of use.
2. **DEMONSTRATION** (teacher-led) allows teachers to invite scientific discussions and can help uncover misconceptions and, most importantly, lead to heightened curiosity and interest in the topic being studied.
3. **GUIDED INQUIRY LAB** which is a traditional lab that allows students to perform an investigation in order to solve a problem. Students will hypothesize, collect and analyze data and communicate their results.
4. **TEACHER GUIDES to DEMOS & SCIENCE STATIONS** help get you started and give you background information to make your science lessons engaging.
5. **7 SCIENCE STATIONS** which are designated locations in the classroom with activities that challenge students to extend their knowledge and elaborate on their science skills by working independently of the teacher in small groups or pairs. Stations included are:
 - **INFORMATION STATION** – Group members will read an interesting and relevant science passage then complete a task to help increase science literacy and deepen their understanding of the science concept.
 - **OBSERVATION STATION** – Group members will have images, illustrations, or actual samples at this station that show applications or processes of the science topic. Using what they've learned, they will need to apply their observation skills to complete the questions attached to each.
 - **CALCULATION STATION** – Group members use their math skills to complete the station challenge. Skills may include graphing, analyzing data, using models, measurement, and calculating formulas or word problems.
 - **INVESTIGATION STATION** – Group members will work with one another to explore the concept through hands-on activities so they may practice specific inquiry process skills as they learn.
 - **COMMUNICATION STATION** – There are three different options for this station: interviews, video, group essay. Depending on the option you choose, group members will communicate what they know by answering questions in creative ways.
 - **CREATION STATION** – Group members will work together to solve a STEM (Science, Technology, Engineering, Math) challenge by creating models or designs that demonstrate their understanding of the science topic being taught.
 - **IMAGINATION STATION** – This station makes science concepts relevant for students by asking them to imagine scenarios that will bring about discussion and critical thinking.
6. **INQUIRY PROCESS SKILLS CHECKLIST** is provided with each set to show teachers and administrators the inquiry skills used by students in each activity. These skills include, but are not limited to, communicating, creating models, inferring, classifying, identifying variables, measuring, observing, predicting, gathering and organizing data, comparing and contrasting, interpreting data, and manipulating materials.

SCIENCE STATIONS



Eye Safety

SCIENCE SKILLS AND LAB SAFETY

Name: _____ Date: _____

Procedure:

1. Draw an eye on the underside of the Petri dish and display for class using the projector.
2. Crack open the egg and place the egg white only in the Petri dish.
3. Explain that the proteins in egg whites are similar to those found in the protective layer of the eye.
4. Tell them that someone was not being cautious and has splashed acid into their eye - add drops of acid to the egg white.
5. Ask students to make observations of what is happening to the egg white.
6. Try adding water to reverse the effects. Have students make observations.

What's Happening?

The proteins in the egg white become cloudy when the acid is causing a denaturation of the proteins. This can't be reversed chemically because acid is strong and is permanent that is chemical reactions occur because of their size or shape if not used properly. Students must be made aware of the safety procedure associated with such as wearing goggles, gloves and aprons. Make sure they are aware of safety equipment - eye wash station, shower, fire blanket, etc.

Discussion:

Q: What happened to the "eye"?

A: The protective layer became cloudy and damaged the eye.

Q: What type of safety equipment must be worn when doing Lab?

A: goggles, apron, hot fire gloves

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Discussion questions and teacher set-up included!

Teacher guide and answer key offered for every lab!

Easy-to-get materials!



Measure with SI Units

SCIENCE SKILLS AND LAB SAFETY

Name: _____ Date: _____

The standard system of measurement used by scientists around the world is known as the International System of Units, which is abbreviated as SI. SI units are easy to use because they are based on multiples of 10. Each unit is ten times larger than the next smallest unit and one-tenth the size of the next largest unit. The following table lists the prefixes used to name the most common SI units.

Prefix	Symbol	Abbreviation
kilo-	k	1,000
hecto-	h	100
deka-	da	10
deci-	d	0.1
centi-	c	0.01
milli-	m	0.001

Materials:

- scattered seeds
- tape
- balance
- postage scale
- capsaicin (strong) small milk cartons
- fertilizer solution
- metric ruler
- 50 mL graduated cylinder
- colored pencils

Safety:

Wear goggles and gloves.

USER-FRIENDLY PAGES:

Students easily recognize which answer sheet to use at each station by matching station icons located on each page!!

Drip, Drop, Splat!

How does the density of a liquid and drop height affect the shape of droplet splatters?

Materials:

- colored water (graduated cylinder A)
- colored syrup (graduated cylinder B)
- eye dropper
- paper
- metric ruler
- meter stick

Procedure:

1. Make a hypothesis of how density of a liquid will affect splatter size on your lab sheet.
2. Place the piece of paper down on the lab table in order to catch splatters.
3. Measure the heights listed in the data table using a meter stick. Place meter stick with end starting at zero on paper and move up stick when increasing height of drop.
4. Use the eye dropper to drop ONE drop of colored water and ONE drop of colored syrup. Make sure to drop on different places on paper.
5. Measure the size of the splatter in MILLIMETERS. Record in data table on answer sheet.
6. Repeat for each height.
7. Use the collected data to graph the splatter size versus drop height for each liquid.

Analyze and Conclude

1. Was your hypothesis correct? Explain.
2. What are two controls in your experiment that helped you collect the most accurate data possible?

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TEACHERS SAVE TIME:
Laminate station pages and reuse for each class and for years to follow!
Inquiry skills used are timeless!

Name: _____ Date: _____

Hypothesis

Drop Height (cm)

	3	25	50	75	100
Colored Water					
Colored Syrup					

Height of Drop vs. Splatter Size

Number of Drops (mm)

Size of Splatter (mm)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Water																					
Syrup																					

Legend:

- Water
- Syrup

Analyze and Conclude:

1. _____
2. _____

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Instructional Videos



The Intro to Life Science Instructional Videos and Digital Assessments are designed to help teachers move instruction from the group learning space to the individual learning space. Not only does this give students independence in their learning, but it also allows more time for dynamic and interactive learning when teachers meet with students in a group setting.

This resource is perfect for:

- Flipped Classroom
- Absent students
- 1:1 Classrooms
- Sub Plans
- Hybrid Schedules
- Teachers who want more time to guide students as they apply concepts and engage creatively in the subject matter

Features of this resource include:

- Instructional videos which are six minutes or less to keep students focus
- Videos and assessments can be completed independently
- Auto grading and reporting in Google Forms
- Share link with students through educational platforms or email
- Quizzes are editable with 5 – 8 questions per quiz
- Information in video pairs with Nitty Gritty Science Interactive Notebooks

Task Cards & Digital Task Cards

Task cards are a great tool for concept review that can be used in a variety of ways - pairs, small groups, team games, or individually. The reason they are so effective is there is only ONE task per card, allowing students to focus on that single task until they have successfully completed it. Answers sheet and answer key for teachers are included.

The digital, self-checking task cards are hosted at Boom Learning™ and are compatible with Google Classroom. These are perfect for displaying on your interactive whiteboard and leading class games or review sessions.

Print Task Cards

Task Card 9 (DECIDE): ____ control the opening and closing of the stomata.
a. companion cells c. xylem
b. guard cells d. epidermis

Task Card 10 (COMPLETE): The ____ is the part of the flower in which ovules containing eggs are.

Task Card 11 (EXPLAIN): Explain the purpose of a stoma and where it can be found.

Task Card 12 (COMPLETE): The coiling of two vines around each other is an example of a plant response to touch called ____.

Task Card 13 (DECIDE): Plant tissue that transports water and dissolved minerals from roots to the rest of the plant is called ____.
a. phloem c. xylem
b. guard cells d. epidermis

Task Card 14 (DETERMINE): What organelle is pictured above and what is its function?

Task Card 15 (COMPLETE): ____

Task Card 16 (IDENTIFY): Identify the structure of the plant marked F.

Task Card 17 (EXPLAIN): Explain the purpose of a stoma and where it can be found.

Task Card 18 (COMPLETE): ____

Task Card 19 (COMPLETE): The ____ is a seed plant that produces naked seeds.

Task Card 20 (IDENTIFY): Identify the structure of the plant marked F.

Task Card 21 (DECIDE): What is NOT a root function in plants?
a. to store food
b. to produce food
c. to anchor plants
d. to store water

Task Card 22 (COMPARE): Compare the difference between the edible part of a carrot and the edible part of celery.

Task Card 23 (COMPLETE): The ____ is a seed plant that produces naked seeds.

Task Card 24 (IDENTIFY): Identify the structure of the plant marked F.

Digital Task Cards

Card 1: Plants. Identify the structure labeled B on the plant.
Buttons: anther, pistil

Card 2: Plants. Identify the part of the plant where photosynthesis takes place.
Input: _____


Card 3: Plants. What is NOT a root function in plants?
Buttons: to produce food, to store food, to anchor plants, to store water

Study Guides: Includes *print* or *digital* options

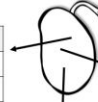
Nitty Gritty Science Study Guides are directly aligned to the notes and assessments offered by Nitty Gritty Science and include a variety of review strategies which meet the needs of your learners for independent study and indirect instruction.

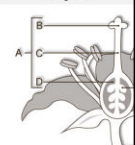
Each study guide provides a combination of strategies which may include:

- Graphic organizers
- Vocabulary building
- Compare and contrast
- Problem solving
- Concept mapping
- Interpreting data
- Critical thinking
- Theme connection
- Matching
- Fill-in-the-blank
- Short answer
- Real world application
- QR videos with accompanying questions


SECTION 2
Directions: Answer the question below about adaptations.
How would you survive in this environment? What are some adaptations that would help them?


SECTION 3
Directions: Draw a line matching each plant with the correct definition.
Plants without seeds
Hornworts Leaves of ferns
Moss Have lignin hardened support tissue
in marshy, sandy soil
used for their hornlike spores

SECTION 4
Directions: Fill in the boxes below with the correct information about seeds.

Seed Characteristics Seed Parts

SECTION 5
Directions: Label the parts of the flower below and explain their function.
stamen stem
ovary Filament
style stigma

Types of plants
Stages of plants

SECTION 6
Directions: Reach each statement of the type you've determined if it is representative of the plant.
Statement
1. Veins on leaves run parallel.
2. Two cotyledon are present.
3. Floral parts in multiples of three.
4. Floral parts in multiples of four or five.
5. Vascular bundles form in a ring.
6. The roots are fibrous.
Directions: Explain the function of the part of the plant.
Part of plant
Roots
Stems
Leaves

SECTION 7
Directions: For each type of tropism, draw a picture to help you remember and differentiate between them.
Tropism
Phototropism Geotropism Thigmotropism Hydrotropism


SECTION 8
Directions: Answer the questions below and fill in the table with the correct description for each life cycle of a plant.
1. When a plant grows toward a stimulus, it's referred to as what?
2. Photoperiodism refers to a plant's response to what?
3. A plant is considered dormant when it does what?
4.

Annual	Biennial	Perennial



Assessments:

Teachers can use a variety of assessments to evaluate student progress throughout the unit. The curriculum provides mini-quizzes for each Interactive Notebook chapter and an online assessments that goes with the instructional videos. The chapter test includes multiple choice, short answer, interpreting diagrams, and an essay.

Name _____ Date _____

Quiz: Plants without Seeds

Complete the chart below by marking the appropriate column.

Description	Non-vascular Plants
1. Bryophytes make up this group.	
2. These plants are called phanerogams.	
3. Over 12,000 species of Ferns.	
4. Low-growing and live in moist areas.	
5. Contain water and sugar-conducting cells.	
6. One species is known as horsetails - used to be used to scrub pots and pans.	

Name _____ Date _____

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CHAPTER TEST

EDITABLE CHAPTER TEST INCLUDES MULTIPLE CHOICE, FILL IN THE BLANK, INTERPRETING DIAGRAMS, & SHORT ANSWERS QUESTIONS

ANSWER KEY INCLUDED - IMAGES ARE BLURRED FOR COPYRIGHT REASONS

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<https://www.teacherspayteachers.com/Store/Nitty-Gritty-Science-Jr>

