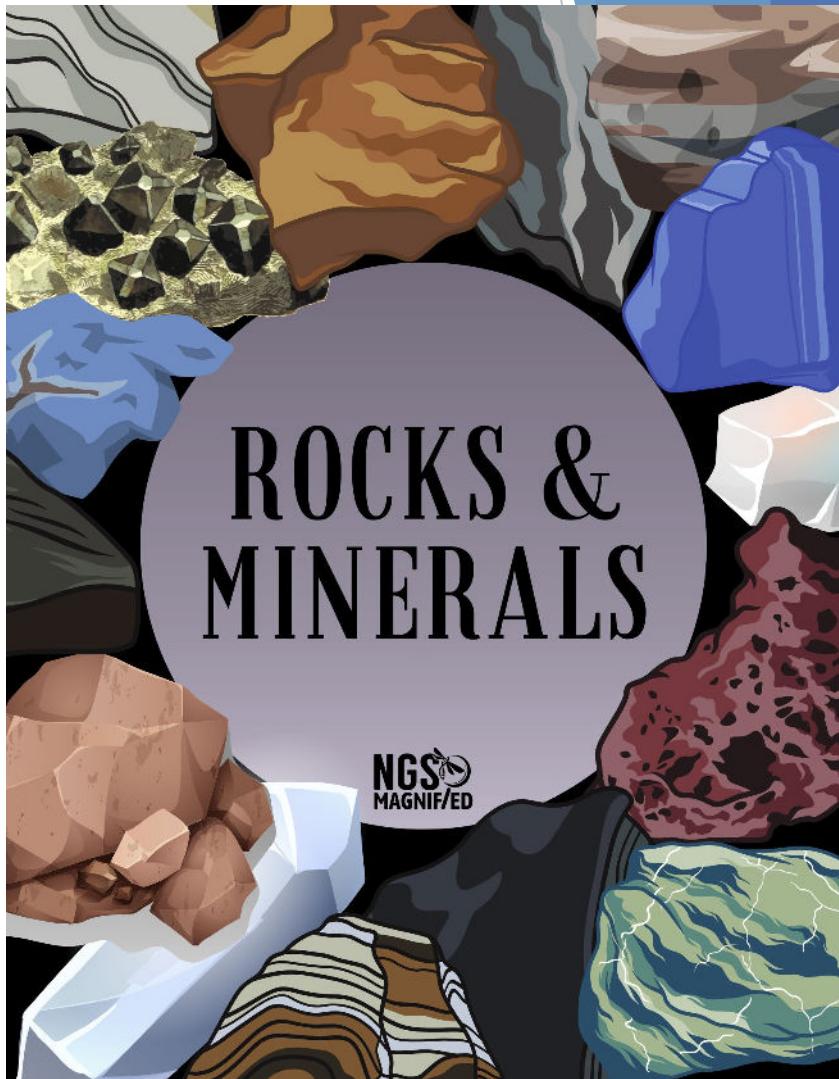




Rocks & Minerals

Rocks and Minerals 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
4	• Guided Inquiry Lab – Student Led		x			
	• 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
7	• Science Stations			x		
	• Science Stations			x		
	• Final draft and testing for Creation Station (STEM)			x	x	
9	• Task Card Review (game-style, full class, partner)			x		
	• 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.

Introduction

If you are new to the idea of using a classroom, stop by my Nifty Gritty Science Interactive Notebooks tutorial to begin with your students, what better way, how it will enhance your creativity.

Focused Lessons with Differentiated I

The lessons shared on the following pages meet students' needs. I have included sections leading the side - out (OOS) for students not reaching the left side. Instructions or material first, but then, no, you will be areas.

Mini-Assessments

Mini 16.22 students can use

Section 1: Properties of Minerals

Properties of Minerals Flow Chart

MINERAL PROPERTIES

Answer Key

Section 2: Mineral Formation & Resources

How Minerals Form

Section 3: How Minerals Form

Section 4: Rock Groups

Description:

Students will understand the process of mineral formation when they complete this activity. They will then be asked to research and find minerals that are formed by each method and complete a data table.

Student printable is offered in color and black and white, also included a completed data table that you can use in your Interactive Notebook.

Environment **Minerals Form Hot Volcanoes** **Minerals Form Hot Volcanoes**

Environment	Minerals Form Hot Volcanoes	Minerals Form Hot Volcanoes
Mineral name and picture		
Mineral name and picture		
Mineral name and picture		

Environment **Minerals Form Cold Solutions** **Minerals Form Hot Solutions**

Environment	Minerals Form Cold Solutions	Minerals Form Hot Solutions
Mineral name and picture		
Mineral name and picture		
Mineral name and picture		

Description:

The final activity for this chapter is helping students understand the formation of sedimentary rock through erosion and pressure. Students will need to recognize which diagram matches the vocabulary term and definition to create this colorful vocabulary flap diagram.

A student printable, a teacher answer key and a mini-quiz are included for this concept.

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.

Directions: Minerals are usually formed through crystallization, which is the process that occurs when particles dissolved in a liquid solidify in an orderly, repeating pattern and form crystals. Geologists can use the physical and chemical properties of these minerals to determine the type of environment in which they formed.

Click and drag the descriptions below of how minerals form and place them in the appropriate location on the image. Research and find two lecture examples of minerals for each environment in which they were formed. Insert image and mineral name in table.

Minerals form in magma cooling deep beneath the surface	Minerals form in hot springs around geysers	Minerals form in a cooling area of a cooling aquifer
---	---	--

HOW MINERALS FORM

MINERAL FORMATION & RESOURCES

Geode -
Crystallization -

Minerals form in two ways:

- Crystallization of magma and lava -
- Crystallization of materials dissolved in water -

- Some minerals form within solutions -
 - Pure metals that crystallize from hot water solutions underground often form veins or a narrow channel or slab that is different from surrounding rock.

Minerals are the source of gemstones, metals and a variety of materials used to make many products.

gemstone		
metals		
ore		

To produce _____ from a _____:

1. Rocks containing minerals must be located through prospecting
2. Ore deposits are removed from the ground through mining
3. Rock is processed by smelting to produce metals

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

Hyperlinked tabs so student can easily move through chapter for review

Students watch video < 6 min to complete notes.



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.

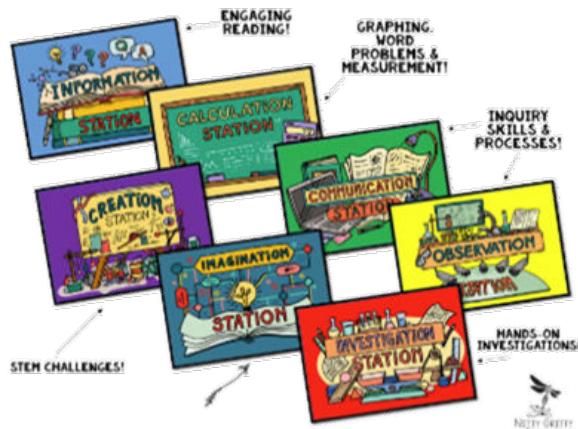
Demos, labs, & Science Stations

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

Procedure:

1. Blow 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 white are similar to those found in the protein layer of the eye.
4. Tell them that acetone was being cautious and has splashed acid into their eye. cold drops of acid to the eye when.
5. Ask students to make observations of what is happening to the egg white.
6. Try adding water to reverse the effects. Do or indicate make observations.

Discussion:

Q: What happened to the egg white?
A: The protein layer became cloudy and damaged the eye.

Q: What type of safety equipment must be worn when doing lab?
A: goggles, aprons, hair ties, gloves

Teacher guide and answer key offered for every lab!

Easy-to-get materials!



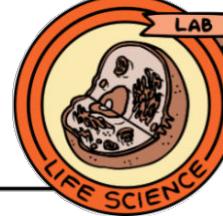
Measure with SI Units
SCIENCE SKILLS AND LAB SAFETY

Common SI Prefixes:

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

Materials:

- graduated cylinder
- cup
- balance
- petri dish
- small empty small containers
- fertilizer solution
- water
- 20 ml. graduated cylinder
- colored pencils



Discussion questions and teacher set-up included!

Drip, Drop, Splat!
How does the density of a liquid will affect splatter height of the liquid and shape of droplet splatters?

Materials:

- colored water (graduated cylinder A)
- colored syrup (graduated cylinder B)
- eye dropper
- paper
- metric rule
- 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 droplets.
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 measuring height of drops.
4. Use the eye dropper to drip 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?

USER-FRIENDLY PAGES:
Students easily recognize which answer sheet to use at each station by matching station icons located on each page!!

Hypothesis:

Drop Height (cm):

Colored Water	Colored Syrup			
5	25	50	75	100

Height of Drop vs. Splatter Size:

Legend:

- Water
- Syrup

Analyze and Conclude:

1. _____
2. _____

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

Instructional Videos

Rocks and Minerals 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 NGS Magnified 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

DECTDE
The repeating pattern of a mineral's particles form a solid called **minerals**.
a. element b. compound
c. crystal d. stone

IDENTIFY
What process causes minerals to form in a shallow lake during dry conditions?
a. melting b. high pressure
c. evaporation d. condensation

DETERMINE
Identify the shape of this crystal structure.

DECTDE
What process causes crystallization of minerals from magma?
a. cooling b. melting
c. evaporation d. high pressure

IDENTIFY
Identify three environments where minerals form.

DETERMINE
What process of sedimentary rock formation is illustrated by diagram C?
a. x b. y
c. z d. w

COMPLETE
is molten rock material that exists below Earth's surface.
a. sedimentary b. metamorphic
c. igneous d. foliated

IDENTIFY
is a mineral's ability to glow under ultraviolet light.

DECTDE
What process causes crystallization of minerals from magma?
a. evaporation b. pressure
c. cooling d. melting

DETERMINE
Identify the shape of this crystal structure.

EXPLAIN
Explain what affects the size of crystals formed from magma.

Digital Task Cards

Rocks and Minerals
What process causes crystallization of minerals from magma?
evaporation
pressure
cooling
melting

Rocks and Minerals
Can be foliated or non-foliated and changed by pressure and heat are all characteristics of what type of rock?
metamorphic
sedimentary

Rocks and Minerals
___ rocks have their grains arranged in parallel layers or bands.
Conglomerate
Foliated
Non-foliated
Chemical

Study Guides: Includes print or digital options

NGS Magnified Study Guides are directly aligned to the notes and assessments offered by NGS Magnified and include a variety of review strategies that 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

The image shows a stack of seven study guides for 'ROCKS & MINERALS'. Each guide is a worksheet with a 'STUDY GUIDE' logo and a title 'ROCKS & MINERALS' on the left. The guides are divided into sections:

- SECTION 1:** Directions: Use the clues to help you unscramble the words below. Use the numbers and letters to answer the riddle on the right.
- SECTION 2:** Directions: Fill in the graphic organizer and answer below about rocks and minerals.
- SECTION 3:** Directions: Label each type of rock and fill in the chart below.
- SECTION 4:** Directions: Draw a foliated and non-foliated metamorphic rock. What is the difference between the two?
- SECTION 5:** Directions: Determine whether each of the statements about the different types of rocks is true or false.
 1. Extrusive rocks form from lava that erupts.
 2. The deeper a rock is buried in the crust, the more it is metamorphosed.
 3. Intrusive rocks form when magma hardens.
 4. Compaction refers to when dissolved mineral particles are forced together.
 5. Sedimentary rocks form when particles are washed and deposited.
- SECTION 6:** Directions: Fill in the blanks with the correct names for the rock cycle.
- SECTION 7:** Directions: Scan the QR code to watch the video about the formation of diamonds. Describe the problem material scientists faced when it came to diamonds. How were they able to help solve this problem? What material did they use? Describe the process in detail below.

Each guide includes a QR code for a video, a cartoon character, and a 'Did you know' box.

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.

<p>Name _____ Date _____</p> <p>Quiz: Continental Drift and Sea Floor Spreading</p> <p>Multiple Choice</p> <p>1. Who first proposed the theory of continental drift?</p> <p>a. Hess b. Dungey c. Wegener</p> <p>2. An evidence to support the theory of continental drift?</p> <p>a. new features b. mountain ranges c. fossils</p> <p>3. Sea floor spreads apart in both sides of a</p> <p>a. mid-ocean ridge b. rift valley c. fracture</p> <p>4. Rocks on the sea floor that lie in a pattern shows record of</p> <p>a. atmosphere b. magnetic field c. tides</p> <p>5. Drift samples isolated from rock samples taken further</p> <p>a. older b. younger c. mid</p>	<p>Name _____ Date _____</p> <p>CHAPTER TEST: DRIFT AND SPREADING</p> <p>Multiple Choice</p> <p>Please answer. Read each sentence and then choose the best answer.</p> <p>1. The theory that reflects the idea that there has been a change in the characteristics of species over time is _____</p> <p>a. birth and death b. birth and diversity c. biogeography</p> <p>2. Below are the facts and concepts about below. WTF</p> <p>a. Waves b. Wind c. Currents d. Tides e. Pressure</p> <p>3. Like things are _____</p> <p>a. spread out b. spread out c. spread out</p> <p>4. The part of the ocean that is deeper than 2000 meters is the _____</p> <p>a. abyssal plain b. deep sea plain c. bathyal plain</p> <p>5. All _____ has</p> <p>a. salt b. water c. air d. pressure</p> <p>6. A group of _____</p> <p>a. electrons b. electrons c. molecules</p> <p>7. Like things are _____</p> <p>a. spread out b. spread out c. spread out</p> <p>8. The information gathered from experiments is called the _____</p> <p>a. data b. research c. conclusion</p> <p>9. The three commonest, easiest and most effective problems are called _____</p> <p>a. descriptive methods b. deductive methods c. inductive methods d. applied science</p> <p>10. Quantitative research is one that</p> <p>a. graphs b. describes c. measures d. all of the above</p> <p>11. What is the first thing one should do when starting a research project?</p> <p>a. Start your research b. Define your problem c. Start your hypothesis</p> <p>12. Data are or are of use in</p> <p>a. defining b. observing c. classifying d. classifying</p> <p>13. The study of life is called _____</p> <p>a. life science b. life study c. life science</p> <p>14. When scientists put things into categories or group together items that are alike in some way, they are _____</p> <p>a. defining b. observing c. classifying d. making models</p> <p>15. If you break a piece of glass, the first thing you should do is _____</p> <p>a. clean up the broken glass b. break it into smaller pieces c. read safety symbols for the lab d. wash it with water</p> <p>16. To make a model, the first thing you should do is _____</p> <p>a. clean up the broken glass b. break it into smaller pieces c. read safety symbols for the lab d. wash it with water</p> <p>17. Complete each statement with the correct vocabulary term.</p> <p>18. Graphs or measurements are examples of data produced by _____ research.</p> <p>19. A _____ is used to make small details of an object visible to a scientist.</p> <p>20. _____ don't you possible dangers and identify safety equipment you should use.</p> <p>21. The common function of all the cells is _____</p> <p>22. The study of life is called _____</p> <p>23. _____ is the study of life.</p>
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ANSWER KEY INCLUDED — IMAGES ARE BLURRED FOR COPYRIGHT REASONS

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