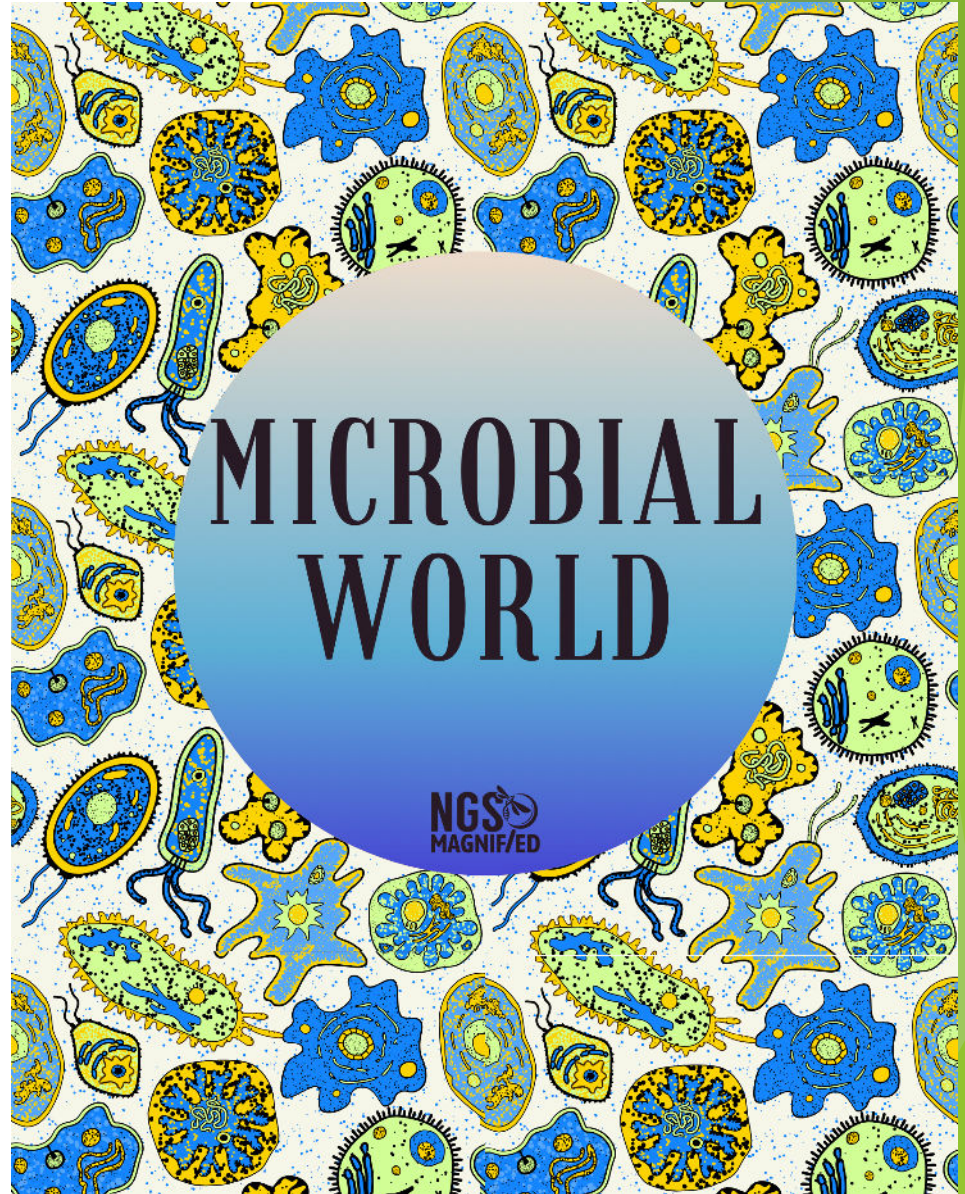


Microbial World



Microbial World 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		
	• Mini-quiz					x
5	• Section 4 Notes – use PowerPoint		x			
	• INB Activity			x		
	• Mini quiz					x
6	• 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: Bacteria

Name That Bacteria

Directions: Cut out the circles below and label each one. The definition table below to identify and write the names of the bacteria into each circle. Complete glue table and place them into your Science Interactive Notebook.

Picture	Meaning	Enter Shape
	rod	Coccus
	oval	Bacillus
	Spiral	Spirillum
	Comma	Vibrio

Name That Bacteria Answer Key

Directions: Cut out the circles below and label each one. The definition table below to identify and write the names of the bacteria into each circle. Complete glue table and place them into your Science Interactive Notebook.

Picture	Meaning	Enter Shape
	rod	Coccus
	oval	Bacillus
	Spiral	Spirillum
	Comma	Vibrio

Section 2: Viruses

Directions: Cut out the circles below and label each one. The definition table below to identify and write the names of the viruses into each circle. Complete glue table and place them into your Science Interactive Notebook.

Picture	Meaning	Enter Shape
	rod	Coccus
	oval	Bacillus
	Spiral	Spirillum
	Comma	Vibrio

Section 3: Protists

Directions: Cut out the circles below and label each one. The definition table below to identify and write the names of the protists into each circle. Complete glue table and place them into your Science Interactive Notebook.

Picture	Meaning	Enter Shape
	rod	Coccus
	oval	Bacillus
	Spiral	Spirillum
	Comma	Vibrio

Viral Infection

Directions: Cut out the following steps of lytic and lysogenic viral infections and glue in the proper position of the lytic and lysogenic cycles.

Viral Infection Answer Key

Directions: Cut out the following steps of lytic and lysogenic viral infections and glue in the proper position of the lytic and lysogenic cycles.

VIRAL INFECTION

Directions: Cut out the following steps of lytic and lysogenic viral infections and glue in the proper position of the lytic and lysogenic cycles.

Section 3: Protists

Directions: Cut out the following steps of lytic and lysogenic viral infections and glue in the proper position of the lytic and lysogenic cycles.

Instructions:

Your linguistic learners are going to have a hoot with this activity. I mean, c'mon, who doesn't want to write about protists?

My Pet Paramecium is one of those sneaky assignments in the sense that the students will keep looking up the definition of the vocab words to see how to use them in their poem or song and will learn the functions of the paramecium without even realizing it!

Cut-outs of the pocket, paramecium and poem cards are all available for this concept, as well as the mini-quiz.

Have fun and make sure you give students an opportunity to share!

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: Use the table to identify the images. Click and drag the names of the bacteria to the correct image.

PREFIX	MEANING	BASIC SHAPE	MEANING
Diplo-	two	Coccus	round
Strepto-	twisted chain	Bacillus	Rod, stick
Staphylo-	clustered	Spirillum	spiral
		Vibrio	S or comma

BACTERIA

Prokaryote -

Prokaryotes are identified by characteristics such as _____ the chemical nature of their _____ the way they _____ and the way they obtain _____

Cell walls -

Movement -

Some _____ can make their own _____ either using sun or _____ while others need to take in food by _____ other organisms or food organisms make. Like many other organisms, most bacteria use _____ to break down food for _____

Reproduction

Binary fission	
Conjugation	
Endospore	

BACTERIA

VIDEOS

PROTISTS

FUNGI

CLASSROOM LIBRARY

Digital Textbook

For further exploration, click button(s) below:

Bacteria Microbiology Society

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

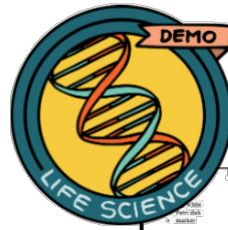
Working in the lab and being engaged in science experiments is the most exciting part of science.



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

Materials:

- projector
- yellow and (RED) toothpaste
- eye dropper
- water

Procedure:

- Place an eye on the underside of the Post-it and display for class using the projector.
- Each group the eye dropper for eye vision only of the front glass.
- Explain that the proteins in egg whites are similar to those found in the protective layer of the eye.
- Tell them that scientist's eye not being damaged and has splashed with their eye. Call drops of water to the egg whites.
- Ask students to make observations of what is happening to the egg whites.
- Try adding water to cover the effects. Have students make observations.

What's Happening?

The proteins in the egg whites become cloudy when they are exposed to a denaturation of the proteins. This is an irreversible chemical reaction and students need to understand that a chemical reaction can cause damage to their eyes or skin if not used properly. Students must be made aware of the safety procedures: cover the face, such as wearing goggles, gloves and aprons. Make sure they are aware of safety equipment: eye wash station, shower, fire blanket, etc.

Discussion:

- What happened to the "eye"?
- The protective layer became cloudy and denatured the eye.
- What type of safety equipment must be worn when doing lab?
- Goggles, apron, hair net, gloves.

©2008 Third Step Science



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

The standard system of measurement used by scientists around the world is known as the International System of Units, which is abbreviated as SI. It is very easy to use because they use basic units of measurement. SI units are used to measure length, mass, volume, temperature, time, and force. The following table lists the prefixes used to name the basic common SI units.

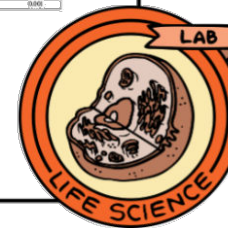
Prefix	Symbol	Amount
kilo-	k	1,000
hecto-	h	100
deka-	da	10
deci-	d	0.1
centi-	c	0.01
milli-	m	0.001

Materials:

- graduated cylinder
- tape
- balance
- weighing scale
- equipment (single) small scale balance
- graduated cylinder
- metric ruler
- 10 mL graduated cylinder
- graduated cylinder

Safety:

©2008 Third Step Science



Drip, Drop, Splat!

How does the density of a liquid and drop height of the liquid 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:

- Make a hypothesis of how density of a liquid will affect splatter size on your lab sheet.
- Place the piece of paper down on the lab table in order to catch splatters.
- 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.
- 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.
- Measure the size of the splatter in MILLIMETERS. Record in data table on answer sheet.
- Repeat for each height.
- Use the collected data to graph the splatter size versus drop height for each liquid.

Analyze and Conclude:

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

©2008 Third Step Science

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

Investigation Station

Name _____ Date _____

Hypothesis _____

	Drop Height (cm)
Colored Water	3 25 50 75 100
Colored Syrup	

Height of Drop vs. Splatter Size

Y-axis: Height of Drop (cm) 0 to 100
X-axis: Size of Splatter (mm) 0 to 100

Legend:

- Water
- Syrup

Analyze and Conclude:

- _____
- _____

©2008 Third Step Science

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

Instructional Videos

Microbial World 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

The print task cards are arranged in a grid. Each card has a pink border and a circular icon in the top right corner labeled 'The Microbial World'. The cards contain the following tasks:

- Card 1:** **DECIDE** Which of the following processes brings about an exchange of genetic information between bacterial cells?
a. binary fission c. conjugation
b. replication d. bridging
- Card 2:** **DESCRIBE**
- Card 3:** **COMPLETE**
- Card 4:** **DECIDE** Viruses are found in _____.
a. water
b. air
c. soil
d. all of the above
- Card 5:** **IDENTIFY** Identify the organism in the diagram.
- Card 6:** **DECIDE**
- Card 7:** **COMPLETE**
- Card 8:** **DECIDE** A protozoan that moves by lashing one or more of its whip like parts is a(n) _____.
a. flagellate c. fungi
b. slime mold d. diatom
- Card 9:** **DECIDE**
- Card 10:** **DECIDE**
- Card 11:** **COMPLETE** Animal like protists are commonly called ____.
- Card 12:** **DECIDE** A _____ is a unicellular algae that has a glass-like cell wall containing silica.
a. flagellate c. fungi
b. slime mold d. diatom
- Card 13:** **COMPLETE** A _____ is a thick internal wall that forms and encloses a bacterium's DNA to protect it until more favorable growth conditions.
- Card 14:** **COMPLETE** A _____ consists of a fungus and algae in a mutualistic relationship.
- Card 15:** **IDENTIFY** Identify the structure of the virus that surrounds the nucleic acid.
- Card 16:** **IDENTIFY**

Digital Task Cards

The digital task cards are displayed in a stack. Each card has a blue header with the title 'The Microbial World' and a colorful border. The cards contain the following tasks:

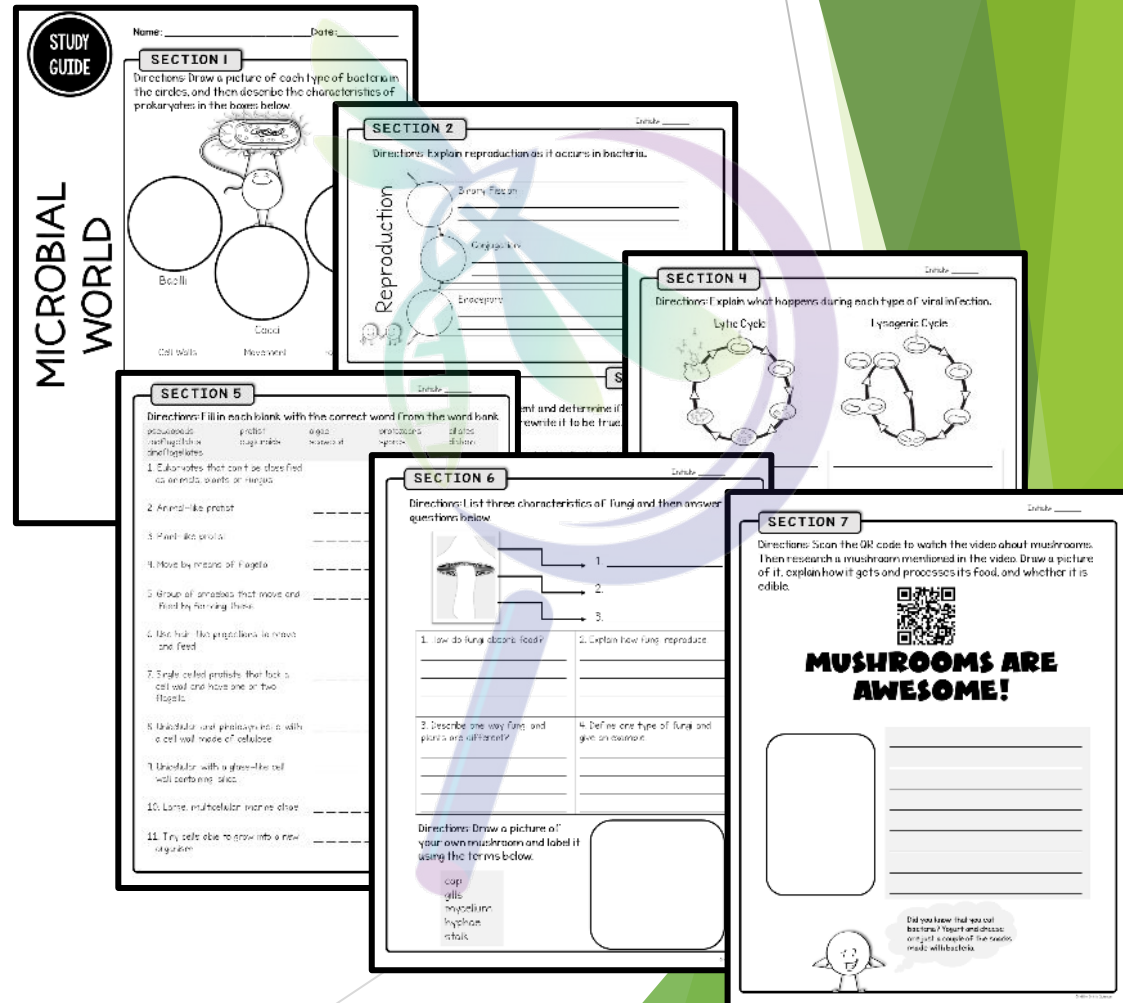
- Card 1:** Which of the following processes brings about an exchange of genetic information between bacterial cells?
a. binary fission c. conjugation
b. replication d. bridging
- Card 2:** Viruses are found in _____.
a. water
b. air
c. soil
d. all of the above
- Card 3:** A protozoan that moves by lashing one or more of its whip like parts is a(n) _____.
a. flagellate c. fungi
b. slime mold d. diatom
- Card 4:** A _____ is a unicellular algae that has a glass-like cell wall containing silica.
a. flagellate c. fungi
b. slime mold d. diatom
- Card 5:** A _____ is a thick internal wall that forms and encloses a bacterium's DNA to protect it until more favorable growth conditions.
- Card 6:** A _____ consists of a fungus and algae in a mutualistic relationship.
- Card 7:** Identify the structure of the virus that surrounds the nucleic acid.

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




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 Fungus

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____




F

Name _____ Date _____

Quiz Fungus

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____



F

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

ANSWER KEY INCLUDED — IMAGES ARE BLURRED FOR COPYRIGHT REASONS

Terms of Use:



Thank you for sharing NGS Magnified with your students!

Terms of Use

Copyright © NGS Magnified, LLC (formerly Nitty Gritty Science, LLC.) All rights reserved by author Dr. Erica Colón. This product is to be used by the original downloader only. Copying for more than one teacher, classroom, department, school, or school system is prohibited. This product may not be distributed or displayed digitally for public view. Failure to comply is a copyright infringement and a violation of the Digital Millennium Copyright Act (DMCA). Clipart and elements found in this PDF are copyrighted and cannot be extracted and used outside of this file without permission or license. Intended for classroom and personal use ONLY.

Contact Information:

Email: admin@nittygrittyscience.com

Website: www.NGSmagnified.com

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

