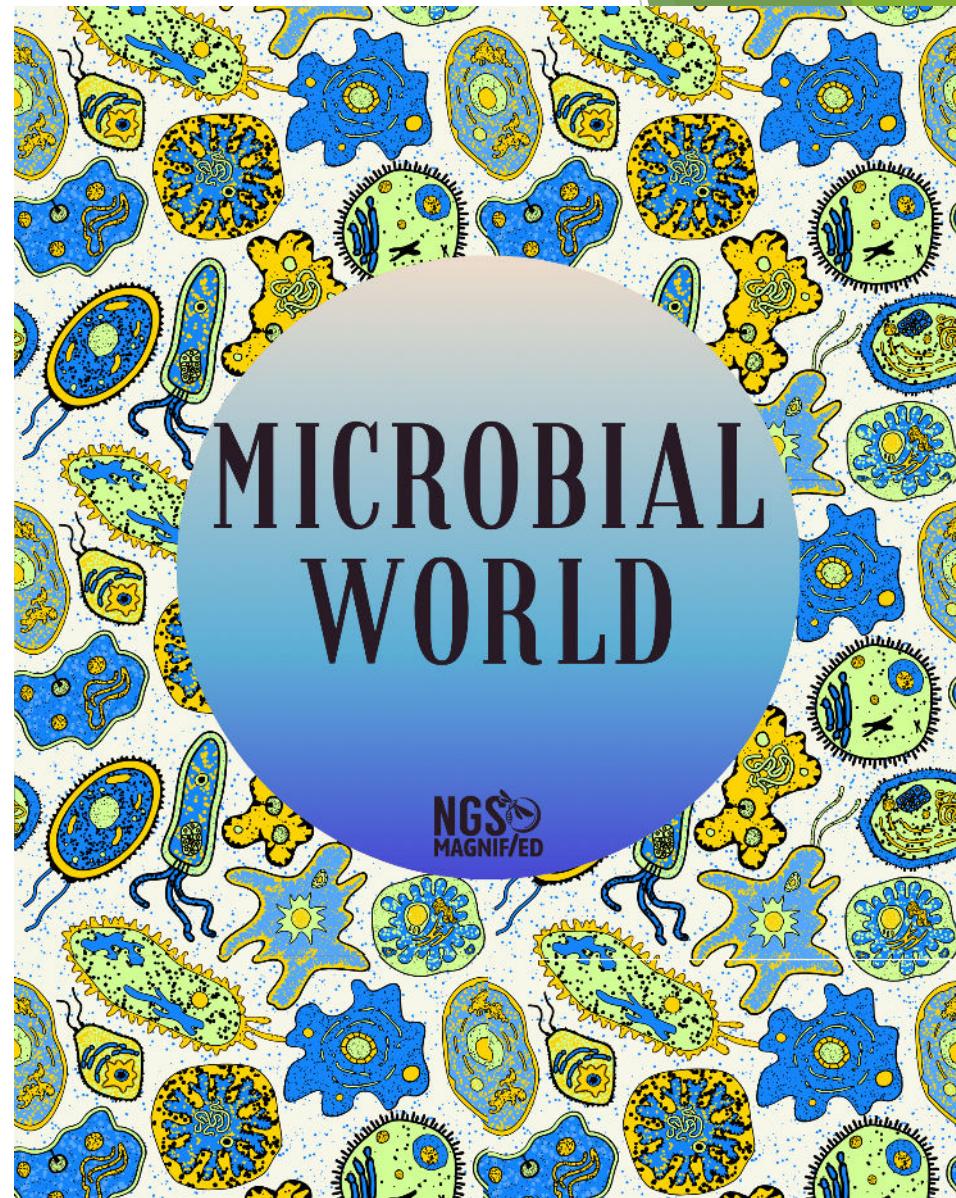


Microbial World



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		
	• Section 3 Notes – use PowerPoint	x				
4	• INB Activity			x		
	• Mini-quiz					x
	• Section 4 Notes – use PowerPoint	x				
5	• INB Activity			x		
	• Mini quiz					x
	• Science Stations			x		
6	• Science Stations				x	
7	• Final draft and testing for Creation Station (STEM)				x	x
8	• Task Card Review (game-style, full class, partner)				x	
9	• Chapter Test					x
10	• 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.

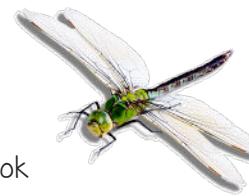
Elaborate – It is important to involve students in further experiences that apply, extend, or elaborate the concepts, processes, or skill they are learning. Elaborate activities provide time for students to apply their understanding of concepts and skills. They might apply their understanding to similar 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 paste each on the dotted line table below to identify and write the names of the bacteria. Include each to complete the glue table and glue this into your Science Interactive Notebook.

Classification of Bacteria Shape and Number

Prefix	Meaning	Plural Shape
mono-	one	Monococcus
di-	two	Diadipus
tri-	three	Tricoccus
quadri-	four	Quadruplo
multi-	more than one	Multi

Name That Bacteria Answer Key

Directions: Cut out the circles below and paste each on the dotted line table below to identify and write the names of the bacteria. Include each to complete the glue table and glue this into your Science Interactive Notebook.

Classification of Bacteria Shape and Number

Prefix	Meaning	Plural Shape
mono-	one	Monococcus
di-	two	Diadipus
tri-	three	Tricoccus
quadri-	four	Quadruplo
multi-	more than one	Multi

Viral Infection

Directions: Cut out the circles below and paste each on the dotted line table below to identify and write the names of the bacteria. Include each to complete the glue table and glue this into your Science Interactive Notebook.

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

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

Viral Infection - Answer Key

VIRAL INFECTION

The diagram illustrates the viral infection process. It starts with a virus attaching to a host cell and injecting its DNA. The DNA then directs the host cell to produce new virus particles. In the Lytic Cycle, the host cell bursts, releasing the new viruses. In the Lysogenic Cycle, the host cell does not burst, instead, the viral DNA becomes part of the host cell's genome, and the cycle can be triggered later.

Name _____ Date _____

Quiz Bacteria

Circle the term that completes each sentence.

1. A **bacterium** is a unicellular microorganism that lacks a nucleus and organelles in its **Plasmid**.

2. **Spherical** shaped bacteria are identified using the term **Coccoid**.

3. **Vegetative** microorganisms are used to make **fermentation** products.

4. **Binary fission** is a method used to determine **size** of bacteria.

5. **Prokaryotes** are unicellular organisms that lack a nucleus and organelles.

6. **Spores** are a type of **reproductive** cell.

7. **Binary fission** is a method used to determine **size** of bacteria.

Section 2: Viruses

Name _____ Date _____

Quiz Viruses

Put the following steps of the lytic cycle in the correct order: 1-6

1. **DNA** from the virus is taken into the cell.

2. Virus takes over and begins synthesizing new virus proteins and

3. Cell裂解 releases new viruses.

4. Virus attaches to cell.

5. Virus invades and nucleic acids assemble into complete virus particles.

6. Viral enzymes.

7. Cell lysis.

Section 3: Protists

Instructions:

Your linguistic learners are going to have a hoot with this activity. T-terms, anyone, who doesn't want to write about paramecia?

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.

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

- Bacillus
- Diplobacillus
- Diplococcus
- Spirillum
- Staphylococcus
- Streptobacillus
- Streptococcus
- Vibria

CLASSIFICATION OF BACTERIA

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

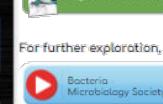
Binary fission
Conjugation
Endospore

Hyperlinked tabs so student can easily move through chapter for review

Students watch video < 6 min to complete notes.



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

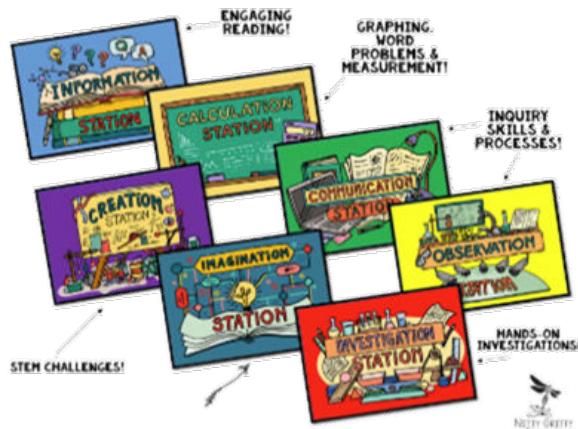
Working in the lab and being engaged in science experiments is the most exciting part of science.



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

Procedure

- Observe an eye on the underside of the Petri dish and display for class using the projector.
- Crack open the egg and place the egg white only in the Petri dish.
- Explain that the proteins in egg white are similar to those found in the protein layer of the eye.
- Tell them that acetone was being cautious and has splashed acid into their eye. cold drops of acid to the eye when.
- Ask students to make observations of what is happening to the eye when.
- Try adding water to increase the effects. Ask students make observations.

Discussion questions and teacher set-up included!

Teacher guide and answer key offered for every lab!

Easy-to-get materials!



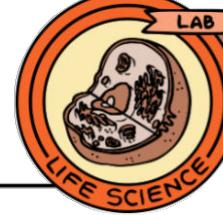
Measure with SI Units

SCIENCE SKILLS AND LAB SAFETY

Prefix	Symbol	Amount
kilo	k	1,000
centi	c	0.01
milli	m	0.001
deka	da	10
deci	d	0.1
micro	μ	0.000001
liter	L	0.000001

Materials

- graduated cylinder
- cup
- balance
- petri dish
- 100 mL graduated cylinder with markings
- 10 mL graduated cylinder
- 10 mL graduated cylinder
- 10 mL graduated cylinder
- colored pencils



Drip, Drop, Splat!

How does the density of a liquid affect the size and 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. Record on your lab sheet.
- Place the piece of paper down on the lab table in order to catch droplets.
- 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 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 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)

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



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 focused
- 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 image shows a grid of 16 task cards, each with a unique number and a specific task. The cards are arranged in four rows and four columns. Each card has a decorative border and a small circular logo in the top right corner.

- 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 (DECIDE):** Viruses are found in ____.
a. water b. air c. soil d. all of the above
- Card 3 (COMPLETE):** 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 (DECIDE):** What is a diatom?
a. b. c. d.
- Card 5 (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 6 (IDENTIFY):** Identify the organism in the diagram.
- Card 7 (COMPLETE):** A ____ is a thick internal wall that forms and encloses a bacteria's DNA to protect it until more favorable growth conditions.
- Card 8 (IDENTIFY):** Identify the structure of the virus that surrounds the nucleic acid.
- Card 9 (DECIDE):** Animal-like protists are commonly called ____.
- Card 10 (DECIDE):** A ____ consists of a fungus and algae in a mutualistic relationship.
- Card 11 (COMPLETE):** Fungi that transform complex organic substances into raw materials that other organisms can use are ____.
- Card 12 (IDENTIFY):** Identify the structure of the virus that surrounds the nucleic acid.
- Card 13 (DECIDE):** A ____ is a thick internal wall that forms and encloses a bacteria's DNA to protect it until more favorable growth conditions.
- Card 14 (COMPLETE):** A ____ is a thick internal wall that forms and encloses a bacteria's DNA to protect it until more favorable growth conditions.
- Card 15 (DECIDE):** A ____ consists of a fungus and algae in a mutualistic relationship.
- Card 16 (IDENTIFY):** Identify the structure of the virus that surrounds the nucleic acid.

Digital Task Cards

The image shows three digital task cards from the 'The Microbial World' collection on the Boom Learning platform. Each card features a different background image of microorganisms.

- Card 1:** Which of the following processes brings about an exchange of genetic information between bacterial cells?
- Card 2:** Fungi that transform complex organic substances into raw materials that other organisms can use are ____.
- Card 3:** A ____ consists of a fungus and algae in a mutualistic relationship.

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.

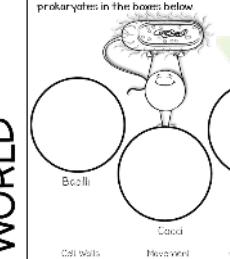
Each study guide provides a combination of strategies which may include:

- 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

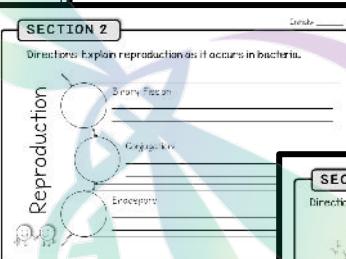
STUDY GUIDE

MICROBIAL WORLD

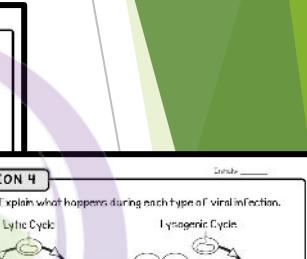
SECTION 1
Directions: Draw a picture of each type of bacteria in the circles, and then describe the characteristics of prokaryotes in the box below.



SECTION 2
Directions: Explain reproduction as it occurs in bacteria.



SECTION 3
Directions: Explain reproduction as it occurs in fungi.



SECTION 4
Directions: Explain what happens during each type of viral infection.



SECTION 5
Directions: Fill in each blank with the correct word from the word bank.

prokaryotes	protozoa	fungi	viruses
metabolism	parasites	algae	detoxify
autotrophs	mutualism	heterotrophs	digest

1. Eukaryotes that can't be stored fed on animals, plants or fungi.

2. Animal-like protist.

3. Plant-like protist.

4. Move by means of flagella.

5. Group of protists that move and feed by absorbing these.

6. Use hair like projections to move and feed.

7. Single celled protists that lack a cell wall and have one or two flagella.

8. Unicellular and pluricellular with a cell wall made of cellulose.

9. Unicellular with a glass-like cell wall containing starch.

10. Large, multicellular, noncellular.

11. Tiny cells able to grow into a new organism.

SECTION 6
Directions: List three characteristics of fungi and then answer questions below.



1. _____
2. _____
3. _____

1. How do fungi obtain food?
2. Explain how fungi reproduce.

3. Describe one way fungi and plants are different?
4. Define one type of fungi and give an example.

SECTION 7
Directions: Scan the QR code to watch the video about mushrooms. Then research a mushroom mentioned in the video. Draw a picture of it, explain how it gets and processes its food, and whether it is edible.



MUSHROOMS ARE AWESOME!

Did you know that you can eat them? Yeast and cheese are just a few of the needs mushrooms fulfill.

cap
gills
mycelium
spores
stems



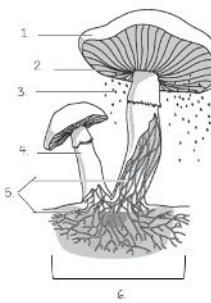
Assessments:

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.

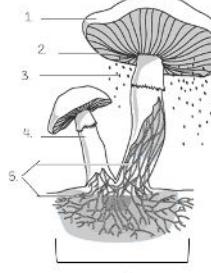
Name _____ Date _____

Quiz: Fungus

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



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



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

CHAPTER TEST EDITABLE TEST Multiple Choice
Choose the answer that best completes each statement.

1. The theme that reflects the idea that there has been a _____
a. energy
b. loss of diversity
c. increase
d. evolution

2. Below are the facts and concepts about biology. In _____
a. biology
b. chemistry
c. physics
d. psychology

3. Living things _____
a. growth and reproduction
b. movement
c. respond to stimuli
d. all of the above

4. All _____ has _____
a. atoms
b. molecules
c. elements
d. matter

5. A group of _____ is called a _____
a. atoms
b. elements
c. molecules
d. matter

6. Living things _____
a. respond to stimuli
b. grow
c. make their own food
d. breathe

7. The part of the _____ is called the _____
a. environment
b. ecosystem
c. habitat
d. all of the above

8. All living things _____ to make more living things.
a. reproduce
b. move
c. grow
d. all of the above

9. The _____ is the study of biology to learning about life.
a. theory
b. facts
c. science
d. all of the above

10. The information gathered from experiments is called the _____
a. data
b. theory
c. hypothesis
d. conclusion

11. The _____ commonly used to solve problems are called _____
a. laws
b. pure science
c. applied science
d. all of the above

12. Quantitative materials is measured in _____
a. grams or sheets
b. length or distance
c. time or temperature
d. all of the above

13. What is the first thing you do when you enter a grocery store?
a. Find the service counter
b. Find the meat department
c. Go to the meat department
d. Find the food aisle

14. Using one or more of your _____, you can _____
a. taste
b. smell
c. touch
d. move only

15. When scientists put things into categories or group together items that are alike in some way, they are _____
a. classifying
b. classifying
c. classifying
d. classifying

16. If a scientist needs to find the first word in a sentence, he should do _____
a. use a dictionary for help
b. use a thesaurus for help
c. read the sentence
d. ask his/her teacher

17. _____ is the first word in a sentence.
a. Capital letters
b. Periods
c. Quotations
d. Punctuation

18. _____ is used to make small details of an object visible to a scientist.
a. Microscope
b. Camera
c. Microscope
d. Camera

19. _____ alert you to possible dangers and identify safety equipment you should use.
a. Signs
b. Labels
c. Labels
d. Signs

20. The standard Japanese unit of time is the _____
a. second
b. minute
c. hour
d. day

21. The units of time is called _____
a. second
b. minute
c. hour
d. day

ANSWER KEY INCLUDED — IMAGES ARE BLURRED FOR COPYRIGHT REASONS

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

Terms of Use:



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