Skills Worksheet

Directed Reading A

Section: Bacteria's Role in the World

1. What are three places where bacteria live?

GOOD FOR THE ENVIRONMENT

- **2.** Which of the following is true?
 - **a.** All bacteria are bad.
 - **b.** Bacteria do not help the Earth in any way.
 - **c.** Bacteria play a harmful role in the nitrogen cycle.
 - **d.** Bacteria are necessary for life on Earth.
 - **3.** Bacteria help the environment by
 - **a.** causing disease.
 - **b.** helping to recycle dead animals and plants.
 - c. causing cavities.
 - **d.** keeping nitrogen away from plants.
- **4.** Plants get nitrogen from
 - **a.** air.

b. water.

- **c.** soil. **d.** bacteria.
- **5.** Why can't plants use the nitrogen in the air?

6. What happens to the nitrogen that is in the air so that plants can use it?

- 7. The process in which bacteria change the form of nitrogen so plants can use
 - it is called _
- 8. How do bacteria recycle leaves and twigs?

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Name	Cl	lass	Date
Directed Reading A cont	inued		
9. Why is it important to	break down dea	nd matter?	
10. The use of microorgan	isms to treat ha	zardous wa	ste is called
11. Why are bacteria and o	 other microorga	nisms used	to fight pollution?
GOOD FOR PEOPLE			
 12. What is one way a. They prevent b. They are use c. They cause of d. They keep st 	y bacteria are ge t cavities. ed to make many liseases. kin and hair clea	ood for peo y foods. an.	ple?
13. Which of the fo	llowing is NOT	made from	bacteria?
a. buttermilk b. cheese		c. regu d. yogu	lar milk irt
14. The sugar in milk is ca15. How do bacteria make	lled lactic acid?		
16. Medicines used to kill	bacteria and oth	her microor	ganisms are
17. Many antibiotics are m	 ade from		
18. How are bacteria used	to make insulin	ı?	

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Directed Reading A continued

19. Changing the genes of bacteria or other living things is called

20. How did scientists get a bacterium to make copies of the frog gene?

21. Give an example of other products scientists can make using genetic engineering.

HARMFUL BACTERIA

- **22.** Pathogenic bacteria are bacteria that
 - **a.** cause disease.
 - **b.** change lactose to lactic acid.
 - **c.** change harmful chemicals to harmless ones.
 - **d.** change the form of nitrogen so plants can use it.

23. What do pathogenic bacteria do once they are inside a host organism?

- **a.** break down lactose
- **b.** take nutrients from the host's cell
- **c.** change harmful cells to harmless ones
- **d.** consume harmful organisms
- **24.** What helps protect a person from a particular bacterial disease?
 - **a.** bioremediation
- **c.** genetic engineering
- **b.** a vaccine **d.** insulin
- **25.** What is used to treat a particular bacterial disease?
 - **a.** bioremediation **c.** genetic engineering
 - **b.** a vaccine
- **d.** an antibiotic
- **26.** A plant with odd-colored spots has been attacked by
 - a. bacteria. **c.** heat.
 - **b.** spiders. **d.** cold.

Directed Reading A continued

27. Name three organisms other than humans that can be attacked by pathogenic bacteria.

28. What are two ways to protect plants from disease-causing bacteria?

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Answer Key

Directed Reading A

SECTION: BACTERIA

- 1. D 8. B
- **2.** C **9.** C
- **3.** A **10.** A
- **4.** B**11.** flagella**5.** A**12.** model
- 5. A 12. nucleus6. C 13. prokarvo
- 6. C
 7. D
 13. prokaryote
 14. eukaryote
- **15.** Answers will vary. Sample answer: move; get energy; reproduce
- **16.** binary fission
- 17. Answers will vary. Sample answer: Bacteria reproduce by binary fission through three steps. (1) The cell's DNA is copied and binds to the cell membrane. (2) The DNA and its copy separate as the cell and membrane grow. (3) When the cell is about double its original size, the membrane pinches inward. A new cell wall forms and separates the two new cells.
- **18.** Answers will vary. Sample answer: moist, warm places
- **19.** Answers will vary. Sample answer: dry or cold places
- **20.** endospore
- **21.** Answers will vary. Sample answer: Bacteria can surround their own bodies with a thick, protective membrane called an endospore, which allows them to remain inactive until conditions are favorable for growth.
- **22.** D
- **23.** C
- **24.** C
- **25.** A
- **26.** B
- **27.** C
- **28.** A
- **29.** energy in sunlight
- **30.** cyanobacteria
- **31.** pigments
- **32.** Answers will vary. Sample answer: by eating red cyanobacteria
- **33.** C
- **34.** A
- **35.** B

- 36. archaebacteria
- **37.** one with little or no oxygen
- **38.** Answers will vary. Sample answer: hot springs at Yellowstone National Park; below ice in Antarctica; far below the Earth's surface
- **39.** Answers will vary. Sample answer: Many archaebacteria do not have cell walls. Archaebacteria with cell walls have a different kind than those eubacteria have. Archaebacteria also often live where nothing else can live.

SECTION: BACTERIA'S ROLE IN THE WORLD

- **1.** Answers will vary. Sample answer: Bacteria live in water, air, and the human body.
- **2.** D
- **3.** B
- **4.** C
- **5.** Answers will vary. Sample answer: It's in a form they can't use.
- **6.** Answers will vary. Sample answer: Nitrogen-fixing bacteria take in nitrogen from the air and change its form.
- 7. nitrogen fixation
- **8.** Answers will vary. Sample answer: Decomposer bacteria break down dead plants and animal matter.
- **9.** Answers will vary. Sample answer: It makes nutrients available to other living things.
- **10.** bioremediation
- **11.** Answers will vary. Sample answer: Some bacteria change harmful chemicals into harmless ones.
- **12.** B
- **13.** C
- 14. lactose
- **15.** Answers will vary. Sample answer: Bacteria break down the sugar in milk, or lactose, and change it into lactic acid.
- **16.** antibiotics
- 17. bacteria

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TEACHER RESOURCE PAGE

- **18.** Answers will vary. Sample answer: Genes are put into bacteria so that it makes insulin and then the insulin is separated from the bacteria for use by people who have diabetes.
- **19.** genetic engineering
- **20.** Answers will vary. Sample answer: They put genes from a frog into the bacterium *Escherichia coli*. The bacterium then started making copies of the frog genes.
- **21.** Answers will vary. Sample answer: products such as insecticides, cleansers, and adhesives
- **22.** A
- **23.** B
- **24.** B
- **25.** D
- **26.** A
- **27.** Answers will vary. Sample answer: plants, animals, protists, fungi, other bacteria
- **28.** Answers will vary. Sample answer: Plants can be treated with antibiotics. Some plants also have been genetically engineered to be resistant to diseases caused by bacteria.

SECTION: VIRUSES

- **1.** A
- **2.** Answers will vary. Sample answer: chickenpox, acquired immune deficiency syndrome (AIDS), common cold, flu
- **3**. A
- **4.** C
- **5.** Answers will vary. Sample answer: Viruses are so small and they change so often that it makes it hard to tell how many types there are.
- **6.** Answers will vary. Sample answer: Viruses are hard to fight because they are so small and change so often.
- **7.** L
- **8.** N
- **9.** N
- 10. N
- 11. L
- **12.** Answers will vary. Sample answer: Viruses can reproduce only inside a living cell that acts as a host.
- **13.** host
- **14.** Answers will vary. Sample answer: It forces the cell to make viruses rather than healthy new cells.

- **15.** Answers will vary. Sample answer: The characteristics that scientists use to group viruses are shape, the type of disease they cause, their life cycle, and the kind of genetic material they contain.
- **16.** C
- **17.** B
- 18. D
- **19.** A
- **20.** Answers will vary. Sample answer: It protects its genetic material and helps a virus enter a host cell.
- **21.** Answers will vary. Sample answer: viruses that cause warts and chickenpox
- **22.** Answers will vary. Sample answer: viruses that cause colds and flu and HIV, which causes AIDS
- **23.** C
- **24.** 3
- **25.** 4
- **26.** 2
- **27.** 1
- 28. lysogenic
- **29.** Answers will vary. Sample answer: In the lysogenic cycle, new viruses are not produced immediately.
- **30.** lysogenic
- **31.** Answers will vary. Sample answer: Viruses are hard to treat because antibiotics don't kill them.
- **32.** Answers will vary. Sample answer: Antiviral medications stop viruses from reproducing.
- **33.** Answers will vary. Sample answer: People can get vaccinations, wash their hands to prevent infection, and never touch wild animals.

Directed Reading B

SECTION: BACTERIA

1. B	13. eukaryote
2. C	14. binary fissior
3. A	15. endospore
4. B	16. D
5. A	17. B
6. C	18. C
7. B	19. A
8. C	20. B
9. A	21. A
10. flagella	22. C
11. nucleus	23. D
12. prokaryote	24. D

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