Name _____ Class _____ Date _____

Section 20–1 The Kingdom Protista (pages 497–498)

Key Concept

- What are protists?

What Is a Protist? (page 497)

1. What is a protist? _____

_____

2. Circle the letter of each sentence that is true about protists.
   a. All are unicellular.
   b. All cells have a nucleus.
   c. All cells have membrane-bound organelles.
   d. All are multicellular.
3. Why are some organisms that consist of thousands of cells considered to be protists?

_____

_____

Evolution of Protists (page 498)

4. The first eukaryotic organisms on Earth were _____.
5. What is biologist Lynn Margulis's hypothesis about where the first protists came from?

_____

_____

_____

_____

_____

Classification of Protists (page 498)

6. Complete the table about protist classification.

GROUPS OF PROTISTS

Group	Method of Obtaining Food
	Consume other organisms
Plantlike protists	
Funguslike protists	

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Introduction (page 499)

1. At one time, what were all animallike protists called? _____
2. How are the four phyla of animallike protists distinguished from one another?

_____

_____

Zooflagellates (page 499)

3. What kind of protists are classified in the phylum Zoomastigina? _____

_____

4. How many flagella does a zooflagellate have? _____

_____

5. Zooflagellates reproduce asexually by means of _____.
6. Is the following sentence true or false? Some zooflagellates have a sexual life cycle.

_____

Sarcodines (page 500)

7. Sarcodines are members of the phylum _____.
8. What are pseudopods? _____

_____

9. What do sarcodines use pseudopods for? _____

_____

10. The best known sarcodines are the _____.
11. What is amoeboid movement? _____

_____

12. What is a food vacuole? _____

_____

13. How do amoebas capture and digest food? _____

_____

Ciliates (pages 501–502)

16. Ciliates are members of the phylum _____.
17. What are cilia? _____
18. What do ciliates use cilia for? _____

Match the ciliate structure with its description.

Structure	Description
_____ 19. Trichocysts	a. Indentation on one side of a ciliate into which food is swept
_____ 20. Macronucleus	b. Smaller nucleus containing a "reserve copy" of the cell's genes
_____ 21. Micronucleus	c. Small, bottle-shaped structures used for defense
_____ 22. Gullet	d. Region of cell membrane where waste-containing food vacuoles fuse
_____ 23. Anal pore	e. Larger nucleus containing multiple copies of most of the cell's genes
_____ 24. Contractile vacuole	f. Cavity in cytoplasm specialized to collect and pump out water

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Sporozoans (page 502)

28. Sporozoans are members of the phylum _____.

29. Circle the letter of each sentence that is true about sporozoans.

a. They are parasitic.
b. They do not move on their own.
c. All have only one host.
d. They reproduce by means of sporozoites.

Animallike Protists and Disease (pages 503–504)

30. What causes malaria? _____

_____

31. Complete the flowchart about the cycle of malarial infection.

An infected *Anopheles* mosquito bites a human and deposits *Plasmodium* spores into the _____.

↓

The spores travel to the _____.

↓

Infected liver cells burst, releasing parasites that infect _____ cells.

↓

The human experiences the symptoms of _____.

↓

A mosquito bites the infected human and picks up the _____ cells.

Ecology of Animallike Protists (page 505)

32. Is the following sentence true or false? Some animallike protists recycle nutrients by breaking down dead organic matter. _____

33. How does the zooflagellate *Trichonympha* make it possible for termites to eat wood?

_____

_____

_____

_____

Introduction (page 506)

1. Plantlike protists are commonly called _____.

2. Is the following sentence true or false? Algae include only multicellular organisms.

_____

Chlorophyll and Accessory Pigments (page 506)

3. In the process of photosynthesis, what substances trap the energy of sunlight?

_____

_____

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4. How does water affect the sunlight that passes through it? _____

_____

5. Why does the dim blue light that penetrates deep into the sea contain little energy that chlorophyll *a* can use? _____

_____

6. How have various groups of algae adapted to conditions of limited light?

_____

_____

7. What are accessory pigments? _____

_____

8. Why are algae such a wide range of colors? _____

_____

_____

Euglenophytes (page 507)

9. Euglenophytes are members of the phylum _____.

10. Circle the letter of each sentence that is true about euglenophytes.

   a. They are remarkably similar to zooflagellates.

   b. They possess chloroplasts.

   c. They have a cell wall.

   d. They have two flagella.

11. What is an eyespot, and what is its function? _____

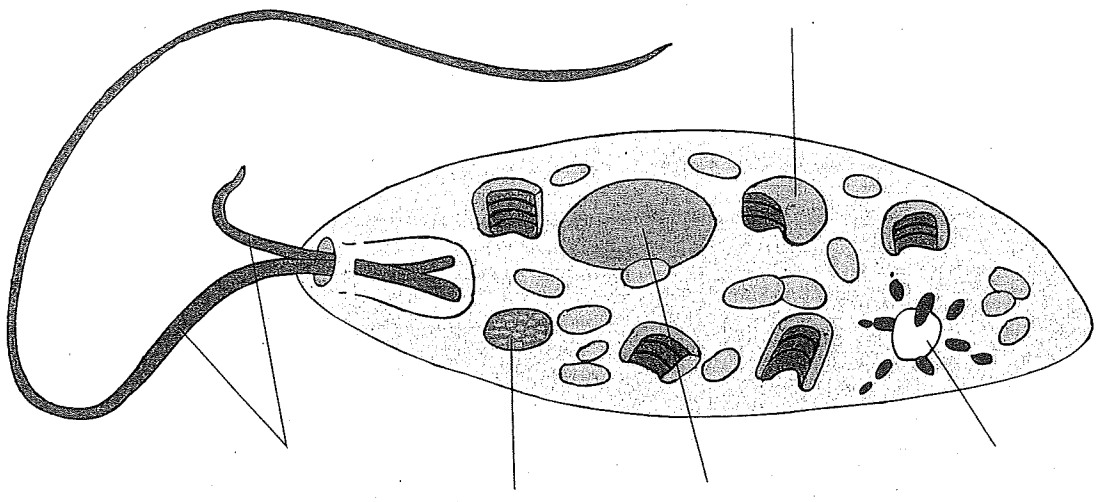
_____

_____

12. Euglenas have a tough, intricate membrane called a(an) _____.

13. How do euglenas reproduce? _____

14. Label the illustration of a euglena.



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Chrysophytes (page 507)

15. The yellow-green algae and the golden-brown algae are members of the phylum _____.

16. What color are the chloroplasts of chrysophytes? _____

17. Circle the letter of each sentence that is true about chrysophytes.
    a. The cell walls of some contain the carbohydrate pectin.
    b. They reproduce sexually but not asexually.
    c. They generally store food in the form of oil.
    d. Some form threadlike colonies.

Diatoms (page 507)

18. Diatoms are members of the phylum _____.

19. Circle the letter of each sentence that is true about diatoms.
    a. They are very rare in almost all environments.
    b. Their cell walls are rich in silicon.
    c. They are shaped like a petri dish or flat pillbox.
    d. They are among the most abundant organisms on Earth.

Dinoflagellates (page 508)

20. Dinoflagellates are members of the phylum _____.

21. How do dinoflagellates obtain nutrition? _____

22. Circle the letter of each sentence that is true about dinoflagellates.
    a. They generally have one flagellum.
    b. Many species are luminescent.
    c. Most reproduce by binary fission.

Ecology of Unicellular Algae (pages 508–509)

23. How do plantlike protists make much of the diversity of aquatic life possible?

24. What are phytoplankton? _____

25. What are algal blooms? _____

26. How can an algal bloom be harmful? _____

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Introduction (page 510)

1. What are seaweeds? _____

2. What are the most important differences among the three phyla of multicellular algae?

_____

_____

Red Algae (page 510)

3. Red algae are members of the phylum _____.

4. Why are red algae able to live at great depths? _____

_____

5. What pigments do red algae contain? _____

_____

6. Which color of light are phycobilins especially good at absorbing?

   a. red **b.** green **c.** yellow **d.** blue

7. Circle the letter of each sentence that is true about red algae.

   a. They can grow in the ocean at depths up to 260 meters.

   b. Most are unicellular.

   c. All are red or reddish-brown.

   d. Coralline algae play an important role in coral reef formation.

Brown Algae (page 511)

8. Brown algae are members of the phylum _____.

9. What pigments do brown algae contain? _____

_____

14. Where are brown algae commonly found growing? _____

_____

15. What is the largest known alga? _____

Green Algae (pages 511–512)

16. Green algae are members of the phylum _____.

17. What characteristics do green algae share with plants? _____

_____

18. What do scientists think is the connection between mosses and green algae?

_____

19. The freshwater alga *Spirogyra* forms long threadlike colonies called

_____.

20. How can the cells in a *Volvox* colony coordinate movement? _____

_____

21. "Sea lettuce" is the multicellular alga _____.

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Introduction (page 516)

1. How are funguslike protists like fungi? _____

_____

_____

2. How are funguslike protists unlike most true fungi? _____

_____

Slime Molds (pages 516–518)

3. What are slime molds? _____

_____

4. Cellular slime molds belong to the phylum _____.
5. Is the following sentence true or false? Cellular slime molds spend most of their lives as free-living cells. _____
6. What do cellular slime molds form when their food supply is exhausted? _____

_____

_____

7. What structure does a cellular slime mold colony produce, and what is that structure's function? _____

_____

_____

8. Acellular slime molds belong to the phylum _____.
9. What is a plasmodium? _____

_____

_____

10. The plasmodium eventually produces sporangia, which in turn produce haploid _____.

Water Molds (pages 518–519)

11. Water molds, or oomycetes, are members of the phylum _____.
12. Water molds produce thin filaments known as _____.
13. What are zoosporangia? _____

_____

_____

14. Where are male and female nuclei produced in water mold sexual reproduction?

_____

_____

_____

15. Fertilization in water molds occurs in the _____.

Ecology of Funguslike Protists (page 519)

16. Why aren't there bodies of dead animals and plants littering the woods and fields you walk through? _____

_____

_____

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