Glencoe Science

Chapter Resources

Introduction to Animals

Includes:

Reproducible Student Pages

ASSESSMENT
✓ Chapter Tests
✓ Chapter Review

HANDS-ON ACTIVITIES
✓ Lab Worksheets for each Student Edition Activity
✓ Laboratory Activities
✓ Foldables—Reading and Study Skills activity sheet

MEETING INDIVIDUAL NEEDS
✓ Directed Reading for Content Mastery
✓ Directed Reading for Content Mastery in Spanish
✓ Reinforcement
✓ Enrichment
✓ Note-taking Worksheets

TRANSPARENCY ACTIVITIES
✓ Section Focus Transparency Activities
✓ Teaching Transparency Activity
✓ Assessment Transparency Activity

Teacher Support and Planning
✓ Content Outline for Teaching
✓ Spanish Resources
✓ Teacher Guide and Answers

McGraw Hill

Glencoe

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Hands-On Activities
Modeling Animal Camouflage

PROCEDURE
1. Pretend that a room in your home is the world of some fictitious animal.
   From materials you can find around your home, build a fictitious animal
   that would be camouflaged in this world.
2. Put your animal into its world and ask someone to find it.

ANALYSIS
1. In how many places was your animal camouflaged?
2. What changes would increase its chances of surviving in its world?
Observing Planarian Movement

**Procedure**
1. Use a dropper to transfer a planarian to a watch glass.
2. Add enough water so the planarian can move freely.
3. Place the glass under a stereomicroscope and observe the planarian.

**Analysis**
1. Describe how a planarian moves in the water.

2. What body parts appear to be used in movement?

3. Explain why a planarian is a free-living flatworm.
Lab Preview
Directions: Answer these questions before you begin the Lab.
1. Which safety symbols are associated with this lab?

2. What structures do hydra have for capturing food?

---

The hydra has a body cavity that is a simple, hollow sac. It is one of the few freshwater cnidarians.

Real-World Question
How does a hydra react to food and other stimuli?

Materials
dropper
hydra culture
small dish
toothpick
Daphnia or brine shrimp
stereomicroscope

Goals
- Predict how a hydra will respond to various stimuli.
- Observe how a hydra responds to stimuli.

Safety Precautions

Procedure
1. Record your observations in Table 1.
2. Use a dropper to place a hydra and some of the water in which it is living into a dish.
3. Place the dish on the stage of a stereomicroscope. Bring the hydra into focus. Record the hydra’s color.
4. Identify and count the number of tentacles. Locate the mouth.
5. Study the basal disk by which the hydra attaches itself to a surface.
6. Predict what will happen if the hydra is touched with a toothpick. Carefully touch the tentacles with a toothpick. Describe the reaction in Table 1.
7. Drop a Daphnia or a small amount of brine shrimp into the dish. Observe how the hydra takes in food. Record your observations.
8. Return the hydra to the culture.
Hands-On Activities

Data and Observation

Table 1

<table>
<thead>
<tr>
<th>Features</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td></td>
</tr>
<tr>
<td>Number of tentacles</td>
<td></td>
</tr>
<tr>
<td>Reaction to touch</td>
<td></td>
</tr>
<tr>
<td>Reaction to food</td>
<td></td>
</tr>
</tbody>
</table>

Conclude and Apply

1. **Analyze** what happened when the hydra was touched. What happened to other areas of the animal?

   ______________________________________________________
   ______________________________________________________
   ______________________________________________________
   ______________________________________________________

2. **Describe** the advantages tentacles provide for hydra.

   ______________________________________________________
   ______________________________________________________
   ______________________________________________________
   ______________________________________________________

Communicating Your Data

**Compare** your results with those of other students. Discuss whether all of the hydras studied had the same responses, and how the responses aid hydras in survival.
Design Your Own
Comparing Free-Living and Parasitic Flatworms

Lab Preview
Directions: Answer these questions before you begin the Lab.
1. What safety symbols are associated with this lab?
2. What is a free-living flatworm?

Real-World Question
How are the body parts of flatworms adapted to the environment in which they live? Are the adaptations of free-living flatworms and parasitic flatworms the same?

Form a Hypothesis
Form a hypothesis about what adaptations you think free-living and parasitic worms might have. What would be the benefits of these adaptations?

Possible Materials
petri dish with a planarian compound microscope prepared slide of a tapeworm stereomicroscope light source, such as a lamp small paintbrush small piece of liver dropper water

Goals
- Compare and contrast the body parts and functions of free-living and parasitic flatworms.
- Observe how flatworms are adapted to their environments.

Test Your Hypothesis
Make a Plan
1. As a group, make a list of possible ways you might design a procedure to compare and contrast types of flatworms. Your teacher will provide you with information on handling live flatworms.
2. Choose one of the methods you described in step 1. List the steps you will need to take to follow the procedure. Be sure to describe exactly what you will do at each step of the activity.
3. List the materials that you will need to complete your experiment.
4. If you need a data table, design one in your Science Journal so it is ready to use when your group begins to collect data.

Follow Your Plan
1. Make sure your teacher approves your plan before you start.
2. Carry out the experiment according to the approved plan.
3. While the experiment is going on, record any observations that you make and complete the data table in your Science Journal.
Analyze Your Data

1. Explain how parasitic and free-living flatworms are similar.

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

2. Describe the differences between parasitic and free-living worms.

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Conclude and Apply

1. Identify which body systems are more developed in free-living flatworms.

________________________________________________________________________

________________________________________________________________________

2. Identify which body system is more complex in parasitic flatworms.

________________________________________________________________________

3. Infer which adaptations allow some flatworms to live as free-living organisms.

________________________________________________________________________

________________________________________________________________________

Communicating Your Data

Compare and discuss your experiment design and conclusions with other students. For more help, refer to the Science Skill Handbook.
Regeneration

If you lost your arm, could you grow a new one? Some animals can do this. If part of its body is lost, this kind of animal will grow a new part. One animal that can do this is a flatworm called a planarian. If a planarian is cut into several pieces, each piece will develop into a complete animal. This regrowth is called regeneration.

Strategy
You will cut three planaria into two pieces. You will observe the pieces for 10 days. You will record any changes you see taking place in the planaria pieces.

Materials
- 2 petri dishes
- labels
- sterilized pond or spring water
- dropper
- microscope slide
- camel's hair brush
- 3 planaria
- scalpel
- magnifying lens

Procedure
1. Half-fill two petri dishes with sterilized pond or spring water. Label one dish heads and the other dish tails.
2. Place a drop of water on a microscope slide. Use a camel's hair brush to place a planarian in the drop of water. An ice cube placed below the slide causes the planaria to spread out for easier cutting.
3. Use a scalpel to cut the planaria in half. **WARNING:** When cutting with a scalpel, always use care to avoid injury.
4. With the camel's hair brush, place the head part into the dish labeled heads and the bottom part into the dish labeled tails.
5. Repeat the procedure with two or more planaria. You will then have three planaria pieces in each dish.
6. Cover both dishes. Place both dishes in a darkened area.
7. Examine the pieces of planaria in the dishes each day for 10 days. Use a magnifying lens to look for changes. Record your observations in Table 1. Add sterilized pond water as needed.
Laboratory Activity 1 (continued)

Data and Observations

Table 1

<table>
<thead>
<tr>
<th>Data</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Heads</td>
</tr>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

Questions and Conclusions

1. How many pieces grew into complete new planaria?

2. Which pieces appeared to regenerate faster?

Strategy Check

_____ Did you cut planaria into two pieces?

_____ Did you observe the planaria sections for 10 days?

_____ Did you record the changes that took place?
Birds are common in every part of the country. Have you ever looked at a bird’s beak and wondered why it is it shaped the way it is? Many animals have physical adaptations that help them in obtaining food. This activity explores the shapes of bird beaks and how the beaks are adapted to different food sources.

**Strategy**

You will infer that birds have physically adapted in relation to the type of food supply. You will deduce what beaks are most efficient for specific types of food.

**Materials**

- **Group 1**: colored water in 10 mL graduated cylinder, shoestring, dropper, sponge strip
- **Group 2**: gummy worms in potting soil, straw, chopsticks, wrench
- **Group 3**: sunflower seeds in shallow pan, pliers, chopsticks, tweezers
- **Group 4**: styrofoam squares in dish of water, pliers, chopsticks, tweezers
- **Group 5**: loose tea in dish of water, slotted spoon, strainer, tweezers
- **Group 6**: popped popcorn, tongs, envelope, chopsticks
- **Group 7**: rice in tree bark, dropper, tongs, tweezers
- **Group 8**: marshmallows hanging on strings, chopsticks, tongs, turkey skewer
- **All groups**: cup, graph paper

**Procedure**

1. Find your group number in Table 1. Assemble your food source and sample beaks.
2. Read the description of the challenge and any additional information listed in Table 1 to help you understand your challenge. Examine the beaks. Note the type of food source in the space provided in the Data and Observations section. Write the type of beaks that your group is using in Table 2. Decide who in the group will perform the challenge with each sample beak and who will keep time.
3. As a group, perform the challenge at least three times with each sample beak. Record the time in seconds for each trial in Table 2 in the Data and Observations section.
4. Calculate the average time for each beak. Enter this information in Table 2.
5. On a piece of graph paper, construct a bar graph showing the average time for each sample beak.
6. Examine the graphs describing the average time for each beak type and food source from all of the groups. Use the average times to determine the most efficient beak type for each food source. Enter your selection in Table 3 in the Data and Observations section.
7. In the last column of Table 3, sketch a bird beak that resembles the instrument you used as a sample beak.
Laboratory Activity 2 (continued)

Data and Observations

Table 1

<table>
<thead>
<tr>
<th>Group</th>
<th>Food source</th>
<th>Sample beaks</th>
<th>Challenge</th>
<th>Additional instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>graduated cylinder</td>
<td>shoestring dropper sponge strip</td>
<td>Transfer 10 mL of water from a graduated cylinder to a cup.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>gummy worms</td>
<td>straw chopsticks wrench</td>
<td>Remove gummy from dirt.</td>
<td>Bury the worms after each trial.</td>
</tr>
<tr>
<td>3</td>
<td>sunflower seeds</td>
<td>pliers chopsticks tweezers</td>
<td>Crack the shell and remove the seed inside.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>floating plastic foam squares</td>
<td>chopsticks tweezers slotted spoon</td>
<td>Remove all of the plastic foam from the water.</td>
<td>Return the squares after each trial.</td>
</tr>
<tr>
<td>5</td>
<td>tea</td>
<td>slotted spoon strainer tweezers</td>
<td>Remove all of the tea from the water.</td>
<td>Return the tea after each trial.</td>
</tr>
<tr>
<td>6</td>
<td>popped corn</td>
<td>tongs envelope chopsticks</td>
<td>Capture 20 kernels.</td>
<td>A partner tosses some kernels into the air. You must catch the kernels while they are still in the air.</td>
</tr>
<tr>
<td>7</td>
<td>rice</td>
<td>dropper tongs tweezers</td>
<td>Remove 30 grains of rice from the bark of a tree.</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>marshmallows hanging from a string</td>
<td>chopsticks tongs turkey skewer</td>
<td>Remove 5 marshmallows from the strings.</td>
<td></td>
</tr>
</tbody>
</table>

Table 2

<table>
<thead>
<tr>
<th>Type of Beak</th>
<th>Trial 1</th>
<th>Trial 2</th>
<th>Trial 3</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Table 3

<table>
<thead>
<tr>
<th>Food Source</th>
<th>Most efficient beak type</th>
<th>Sketch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water in graduated cylinder</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gummy worms in soil</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sunflower seeds in shallow pan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Floating cubes of plastic foam</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loose tea in water</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Popped popcorn in air</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rice in tree bark</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marshmallows on string</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Laboratory Activity 2 (continued)

Questions and Conclusions
1. What are animal adaptations?

2. Explain why birds have different shaped beaks.

3. What happens if an environment is altered?

4. Why can birds with different beak types share a habitat?

Directions: Write the letter of the food source and type of bird described in Column II in the space beside the lab set-up described in Column I.

Column I
5. colored water in a tall, thin vase
6. gummy worms buried in potting soil
7. sunflower seeds spread in a pan
8. plastic foam cubes floating in shallow water
9. loose-leaf tea or herbs in a dish of water
10. popped popcorn
11. rice grains tucked into the bark of a log
12. marshmallows hanging on strings

Column II
a. nectar sucked out of flowers (hummingbird)
b. fish scooped out of water (heron)
c. flying insects caught in wide openings (swallow)
d. worms dug and pulled out of soil (robin)
e. meat pulled off bones (owl, hawk)
f. seeds cracked open (sparrow, finch)
g. small insects picked and pried out of small crevices (woodpecker)
h. fine bits of vegetation carefully scooped out of water (duck, goose, swan)

Strategy Check
5. Can you predict what a bird’s food source is based on the shape of its beak?
6. Can you determine which beak type is most efficient for a given food source?
### Introduction to Animals

**Directions:** Use this page to label your Foldable at the beginning of the chapter.

| Animals | Vertebrates | Invertebrates | Type of Symmetry |
|---------|-------------|---------------|------------------|-----------------|
Meeting Individual Needs
Overview
Introduction to Animals

Directions: Write T if the statement is true; write F if the statement is false.

_____ 1. An animal cell has a nucleus and organelles.
_____ 2. Animals depend on other organisms for food.
_____ 3. Mimicry is one adaptation for escaping predators.
_____ 4. About 97 percent of all animals have backbones.
_____ 5. Adult sponges usually float around from place to place.
_____ 6. For cnidarians, the polyp body type is usually sessile; the medusa body type is free-swimming.
_____ 7. Sponges and polyps are parasitic.
_____ 8. Coral reefs protect the shoreline from damage.
_____ 9. Most flatworms are parasites.
_____ 10. Blood flukes are harmless to people.
_____ 11. Roundworms have a mouth and an anus.

Directions: Label the following animals with the kind of symmetry each has.

12. [Image of a starfish]
13. [Image of a sand dollar]
14. [Image of a flatworm]
15. [Image of a jellyfish]
16. [Image of a beetle]
17. [Image of a human]
Section 1  Is it an animal?

Section 2  Sponges and Cnidarians

Directions: Write the letter of the term or phrase that best completes each sentence.

_____ 1. Animals that eat only plants are called ______.
   a. carnivores  b. herbivores

_____ 2. Of the two groups of animals below, only ______ are cnidarians.
   a. jellyfish  b. roundworms

_____ 3. Jellyfish, insects, and clams are all classified as ______.
   a. vertebrates  b. invertebrates

_____ 4. The body of a sponge is covered with many small openings called ______.
   a. larva  b. pores

_____ 5. The inside of a sponge is lined with ______.
   a. collar cells  b. pore cells

_____ 6. Organisms that are attached to one place throughout their life span are ______.
   a. motile  b. sessile

_____ 7. A ______ organism is one that does not depend on another organism for food or a place to live.
   a. free-living  b. parasitic

_____ 8. A hermaphrodite is an animal that produces ______.
   a. only eggs  b. both sperm and eggs

_____ 9. All cnidarians have ______ symmetry.
   a. bilateral  b. radial

_____ 10. Most cnidarians have armlike structures called ______ that surround the mouth.
   a. pores  b. tentacles

_____ 11. A cnidarian with a ______ form body plan is bell-shaped and free swimming.
   a. polyp  b. medusa

_____ 12. The nerve net of a cnidarian carries ______.
   a. blood  b. impulses

_____ 13. Scientists think that the first form of cnidarian was the ______.
   a. medusa  b. larvae
Directions: Use your textbook to complete the following sentences.

1. Most flatworms live in ____________________, although there are a few species that live in fresh water.
2. Planarians are ____________________ flatworms.
3. The body of a planarian is covered with ____________________.
4. Planarians reproduce asexually by ____________________.
5. Most planarians are ____________________, exchanging sperm with one another.
6. Tapeworms use hooks and suckers to attach themselves to the intestine of the ____________________.
7. A tapeworm grows by producing new ____________________ behind its head.
8. Each body segment of the tapeworm has ____________________ reproductive organs.
9. Once a segment of a tapeworm is filled with ____________________ it breaks off and passes out of the host’s body.
10. Roundworms cause ____________________ disease in dogs.
11. Roundworms make up the group of worms called the ____________________.
12. Many roundworms are parasitic, but most are ____________________.
13. Wastes leave the body of a roundworm through an opening at the end of the digestive tract called the ____________________.
14. Some roundworms cause disease, but helpful uses of roundworms include providing ____________________ to soil.
15. Flatworms and roundworms have ____________________ symmetry, three well-developed tissue layers, and organ systems.
Key Terms
Introduction to Animals

Directions: Circle the terms in the puzzle and then write the terms in the blanks at the left of their definitions.

1. describes an animal that does not depend on one particular organism for food or a place to live
2. eats only plants or parts of plants
3. produces both sperm and eggs
4. an animal without a backbone
5. bell-shaped, free-swimming cnidarian body type
6. eats plants and animals
7. vase-shaped cnidarian body type
8. body parts arranged like spokes around the hub on a bicycle wheel
9. attached to one place
10. a capsule on a cnidarian’s tentacle that helps capture prey
**Introducción a los animales**

**Sinopsis**

**Instrucciones:** Escriba **V** si el enunciado es verdadero; escriba **F** si el enunciado es falso.

1. Una célula animal tiene núcleo y organelos.

2. Los animales dependen de otros organismos para obtener alimento.

3. El mimetismo es una adaptación para escapar de los depredadores.

4. Un 97 por ciento de todos los animales tienen columna vertebral.

5. Las esponjas adultas por lo general flotan a la deriva.

6. Para cnidarios, el tipo de cuerpo de pólipo generalmente es sesil; el tipo de cuerpo de medusa nada libremente.

7. Las esponjas y los pólipos son parásitos.

8. Los arrecifes de coral protegen el litoral de daños.

9. Muchos gusanos planos son parásitos.

10. Los trematodos sanguíneos son inofensivos para el ser humano.

11. Los gusanos redondos tienen una boca y un ano.

**Instrucciones:** Rotula los siguientes animales según el tipo de simetría que exhiben.

12. 

13. 

14. 

15. 

16. 

17. 

Introducción a los animales 21
Instrucciones: Escribe la letra del término o frase que complete mejor cada oración.

____  1. Los animales que sólo consumen plantas son ______.
   a. carnívoros  b. herbívoros

____  2. De los dos grupos de animales siguientes sólo los(las) ______ son celentéreos.
   a. aguamalas  b. gusanos redondos

____  3. Las aguamalas, insectos y mejillones se clasifican como ______.
   a. vertebrados  b. invertebrados

____  4. El cuerpo de una esponja está cubierto por muchas aberturas pequeñas llamadas ______.
   a. larvas  b. poros

____  5. La parte interna de una esponja está cubierta por ______.
   a. células de collar  b. células de poro

____  6. Los organismos que viven adheridos a un sólo sitio son ______.
   a. móviles  b. sésiles

____  7. Un organismo ______ es aquel que no depende de otro organismo para obtener alimento o un sitio donde vivir.
   a. de vida libre  b. parasitós

____  8. Un animal es hermafroditas si produce ______.
   a. solamente huevos  b. tanto espermatozoides como huevos

____  9. Todos los celentéreos tienen simetría ______.
   a. bilateral  b. radial

____  10. La mayoría de los celentéreos tienen estructuras parecidas a brazos llamadas ______ que alrededor de la boca.
   a. poros  b. tentáculos

____  11. Un celentéreo con un plan corporal de ______ tiene forma de campana y nada libremente.
   a. pólipo  b. medusa

____  12. La red nerviosa de los celentéreos lleva ______.
   a. sangre  b. impulsos nerviosos

____  13. Los científicos piensan que el primer celentéreo tuvo forma de ______.
   a. medusa  b. larva
Instrucciones: Usa tu libro de texto para completar las oraciones siguiente.

1. La mayoría de los gusanos planos viven en ____________________, pero hay algunas especies que viven en agua dulce.
2. Las planarias son gusanos planos ____________________.
3. El cuerpo de las planarias está cubierto de ____________________.
4. Las planarias se reproducen asexualmente por medio de ____________________.
5. La mayoría de las planarias son ____________________, e intercambian espermatozoides entre sí.
6. Las tenias usan ganchos y ventosas para adherirse al intestino de ____________________.
7. Las tenias crecen al producir ____________________ nuevos detrás de la cabeza.
8. Cada segmento del cuerpo de una tenia tiene órganos reproductores ____________________.
9. Una vez que un segmento de una tenia se llena de ____________________ se separa y sale del cuerpo del huésped.
10. Los gusanos redondos causan la enfermedad de ____________________ en los perros.
11. Los gusanos redondos forman el grupo de gusanos llamado ____________________.
12. Muchos gusanos redondos son parasíticos, pero la mayor parte son ____________________.
13. Los desechos salen del cuerpo de un gusano redondo a través de una abertura al final del sistema digestivo llamado el(la) ____________________.
15. Los gusanos planos y los gusanos redondos tienen simetría ____________________, tres capas de tejido bien desarrolladas y sistemas de órganos.
**Introducción a los animales**

**Términos claves**

**Instrucciones:** Encierra en un círculo los términos de la sopa de letras y luego escríbelos en el espacio en blanco al lado de cada definición.

1. Describe a un animal que no depende de ningún organismo en particular para obtener alimento o un sitio para vivir

2. Se alimenta solamente de plantas o de partes de plantas

3. Produce tanto espermatozooides como huevos

4. Animal que no tienen columna vertebral

5. Celentéreo de movimiento libre con forma corporal de campana

6. Se alimenta de plantas y animales

7. Forma corporal de un celentéreo como un copa

8. Las partes corporales están organizadas como rayos alrededor del eje de una rueda de bicicleta

9. Adherido a un solo sitio

10. Cápsula en el tentáculo de un celentéreo que ayuda a capturar presas
Is it an animal?

Directions: Each statement is an example of a characteristic shared by all animals. Write the characteristic on the lines provided.

1. Sponges filter microscopic organisms from the water for food.

2. Enzymes are secreted in an earthworm’s digestive tract.

3. Gorillas travel many miles in search of food.

4. The soft body of a mollusk has many different types of tissue.

5. A cat spots prey with its eyes, and its muscles work to chase prey.

Directions: Describe each animal shown below by using one of the following terms: radial symmetry, bilateral symmetry or no symmetry.

6. 

7. 

8. 

9. 

10. 

11. 

Meeting Individual Needs

Reinforcement

1

6

9

11

Meeting Individual Needs

Reinforcement

1

6

9

11

Introduction to Animals 25
Sponges and Cnidarians

Directions: Label the figure of a sponge below. Then fill in the table with the name of each structure and its function.

9. What is spongin?

10. On what structure are the stinging cells of cnidarians located?

11. How do the stinging cells help the cnidarian ingest food?

12. Explain the differences between a polyp and a medusa.

13. Describe the two stages of reproduction of medusa body types.

14. How do coral reefs form?
Flatworms and Roundworms

Directions: Complete the paragraphs by filling in the blanks.

Worms are divided into two types, 1. ________________ and 2. _________________.
All worms are 3. ________________ with three tissue layers. In addition, all worms have
4. ________________ symmetry.

Flatworms were the first group of animals to evolve bilateral symmetry.
5. ________________ and 6. ________________ are types of parasite flatworms.
Parasites depend on a host organism to meet their needs. Planarians however, are
7. ________________ flatworms.

Roundworms were the first group of animals to evolve a digestive system with a
8. ________________ and an 9. ________________. Some, like the
10. ________________ that attack dogs, are parasites. Most, however, are free-living.
Roundworms comprise a group of worms known as 11. ________________.

Directions: Answer the following questions on the lines provided.

12. How does a tapeworm eat?

13. Describe the life cycle of a fluke.

14. What is the most widespread human disease caused by flukes?

15. List three ways roundworms are helpful to humans.
Looking at Animal Characteristics

**Directions:** Below are five characteristics that all animals have in common. Prove to yourself that together, these characteristics define only animals. Fill in the table of living things by writing yes or no in each box, depending on whether that living thing has that characteristic.

**Characteristic 1:** Animals cannot make their own food.

**Characteristic 2:** Animals digest their food.

**Characteristic 3:** Many animals move from place to place.

**Characteristic 4:** Animals have many cells.

**Characteristic 5:** Animal cells have nuclei and organelles. These sorts of cells are called eukaryotic cells.

**Directions:** When completing the table below, you may look at other chapters in your textbook or consult an encyclopedia.

<table>
<thead>
<tr>
<th>Living thing</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kelp</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bacterium</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bird</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dog</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fern</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fish</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flatworm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insect</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jellyfish</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lobster</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mushroom</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paramecium</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Snail</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tree</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Which organisms are animals?
As you learned in your textbook, corals are cnidarian polyps that secrete a hard skeleton around themselves. Many polyps form coral heads. Many coral heads form coral reefs. These coral reefs are extremely important to Earth’s marine environment.

Investigate coral reef environments by researching in the library. Look in encyclopedias, biology books, oceanography books, and special books on coral reefs. Use the card catalog or library computer system to find books on coral reefs. Also check for magazine articles about coral reefs by using either the Readers’ Guide to Periodical Literature or the library’s computer index to magazine articles. Ask the librarian to help you find magazine articles.

Use the information you gathered to write a story on another sheet of paper. Pretend you are a scuba diver exploring a coral reef.

Write a story describing this experience. In your story, try to answer the following questions.

- What is a coral reef like?
- What colors do you see?
- What other organisms seem to live in or near the reef?
- How do other organisms depend on corals?
- Where in the world is this reef located?

Make your story interesting and informative. Use your imagination for the story, and use your research for the details. List at least two sources you used to find information about coral reefs.
Flukes are very tiny animals that cause a variety of nasty diseases. Some of the most widespread and dangerous flukes are in the genus Schistosoma. Found in freshwater, they are indigenous to parts of Africa, South America, the Middle East, Japan, the Philippines, and China and southeast Asia. The diseases caused by these flukes are named schistosomiasis.

**Fluke Eggs Are Dangerous**

There are three species of fluke that cause schistosomiasis, *S. haematobium*, *S. mansoni*, and *S. japonicum*. While the flukes themselves can cause allergic reactions, the eggs of the flukes are responsible for much of the long-term danger. The human body reacts to the eggs with symptoms such as a rash or itchy skin, fever, chills, cough, and muscle aches. The eggs can cause serious liver and bladder damage and, on rare occasions, drift to the brain. If they do get into the brain, the infected person may have seizures or spinal cord swelling.

Schistosomiasis occurs when a person comes in contact with water contaminated with flukes. The larval flukes are able to enter the body through the skin or mouth. Once in the bloodstream, they eventually release their damaging eggs.

**Snails Carry Them**

The eggs of the flukes can leave the human body in urine or feces. The eggs will hatch in freshwater, but the flukes do not immediately infect another human host. They first enter certain species of snails, where they mature. Once they leave the snails, they are ready to infect another human host. For this reason, it is best to avoid contact with bodies of water that contain the snails that carry schistosomes. Precautions include drinking bottled water and swimming in chlorinated pools.

The flukes that cause schistosomiasis can live in a person for many years. It is one of the most pervasive parasitic infections. There are, however, effective medical treatments. Once a doctor has determined that schistosomes are present, there are safe drugs available for use in fighting off the disease.

1. How many species of flukes that cause schistosomiasis are there? What are their names?

2. In what parts of the world is schistosomiasis found?

3. What part of the schistosome life cycle causes the most trouble for humans?

4. How would you avoid getting schistosomiasis?

5. Is there any treatment for schistosomiasis? If so, what is it?
Introduction to Animals

Section 1  Is it an animal?

A. Animals are diverse, but they have basic __________________ in common.

1. Are made of many cells
2. Animal cells have a ________________ and organelles.
3. Depend on other ______________ things in the environment for food
4. ______________ their food
5. Most animals can ______________.
6. Can ______________ sexually; some also can reproduce asexually

B. ______________ from previous generations help individuals survive and reproduce.

1. A basic adaptation is obtaining ______________ from food.
   a. __________ eat plants.
   b. __________ eat only other animals.
   c. Animals that eat both plants and animals are ______________.
   d. Detritivores such as beetles and millipedes eat ______________ matter called detritus.

2. ______________ adaptations help animals survive.
   a. Protective ________________ such as shells or quills help protect animals from predators.
   b. Large ________________ protects some animals.
   c. ______ or camouflage helps other animals blend into the environment or confuse predators.

3. ________________ is an adaptation for predators so they can sneak up on their prey.

4. ________________ adaptations can help animals survive.
   a. Some animals use ______________ to discourage predators.
   b. ________________ allows some animals to outrun predators.
   c. Traveling in ________________ can assist both predators and prey.

C. Animals are ______________ based on similar characteristics.

1. ________________ have a backbone; ________________ do not have a backbone.
Meeting Individual Needs

Note-taking Worksheet (continued)

2. _____________ is how an animal's body parts are arranged.
   a. _____________ animals do not have a definite shape.
   b. Animals with _____________ symmetry have parts arranged in a circle around a center point.
   c. Animals with _____________ symmetry have halves that are nearly mirror images.

Section 2 Sponges and Cnidarians

A. Sponges have little in common with other animals—probably _____________ separately from all other animals.

B. Most sponges are asymmetrical and _____________.
   1. A sponge body is a hollow _____________ with one opening at the top and many small pores along the body tube.
   2. Sponges have no tissues, organs, or organ systems; they often do have _____________ or _____________ for protection and support.
   3. Sponges pull microscopic food particles and oxygen in through their _____________; wastes are removed through the opening at the top of the sponge.
   4. Most sponges are _____________ that produce both sperm and eggs, though sponges cannot fertilize their own eggs; sponges can also reproduce asexually by budding or regeneration.

C. _____________ are invertebrates that include corals, sea anemones, jellyfish, hydras, and Portuguese man-of-wars.
   1. Most cnidarians live in _____________ water; some live as individuals, while others live in colonies.
   2. Most cnidarians have two body _____________.
      a. The polyp is _____________-shaped and sessile.
      b. The _____________ is bell-shaped and free-swimming.
   3. Cnidarians have one body opening and _____________ symmetry.
      a. Two cell layers are arranged into _____________; a digestive cavity breaks down food.
      b. A _____________ net carries impulses and connects all organism parts.
      c. Most cnidarians have _____________ with stinging cells to help capture food.
      d. Cnidarians are _____________.
      e. Cnidarians _____________ both sexually and asexually.

D. Cnidarians have existed more than 600 million years; most of their fossils are _____________.

32 Introduction to Animals
Note-taking Worksheet (continued)

E. Coral reefs form as corals secrete their hard external ________________ on those of earlier generations

1. Coral reefs are diverse and productive ________________ that protect shorelines from erosion.
2. Corals produce ________________ that might have human medical uses.

Section 3 Flatworms and Roundworms

A. ________________ are invertebrates with soft bodies, bilateral symmetry, and three tissue layers organized into organs and organ systems.

B. Flatworms are usually parasites, but a few are ________________ organisms.

1. ________________ are free-living flatworms that feed on small organisms or dead bodies of larger organisms.
   a. Most planarians live under rocks, on ________________ material, or in ________________ water.
   b. Planarians can ________________ asexually or sexually; they lay eggs.
2. ________________ are parasites with a complex life cycle that requires more than one host.
   a. Most flukes reproduce ________________.
   b. Blood flukes cause ________________, a potentially fatal blood disease, in humans.
3. ________________ are parasites that live in the intestines of a host animal.
   a. Tapeworms absorb food digested by the ________________.
   b. Tapeworms produce body ________________ that contain sperm and eggs.
   c. The fertilized eggs pass out of the host’s body and can ________________ another host.

C. Flatworms were probably the first animals to have ________________ symmetry, ________________ and nerves in the head region, and a ________________ tissue layer that develops into organs and systems.

D. Roundworms, also called ________________, are extremely abundant, live in a variety of environments, and have two body openings—a mouth and an anus.

1. Roundworms appeared ________________ in animal evolution, but scientists are not sure how they evolved.
2. Many roundworms are plant and animal ________________.
3. Some roundworms are beneficial because they kill ________________.
4. Roundworms are essential in developing healthy ________________.
Assessment
Introduction to Animals

Part A. Vocabulary Review

Directions: Select the term from the following list that matches each description.

anus   bilateral symmetry   omnivore   cnidaria
free-living   medusa   regeneration

carnivore   hermaphrodite   polyp   sessile

Camouflage   invertebrate   mimicry

tentacle   herbivore   vertebrate   radial symmetry

1. animal with a backbone
2. having body parts arranged in a circle around a center point
3. remaining attached to one place
4. ability of an organism to replace body parts
5. an animal that produces both sperm and eggs
6. group name meaning “stinging-cells”
7. armlike structure having stinging cells
8. cnidarian body plan that is shaped like a tube or vase
9. bell-shaped body plan of cnidarians
10. organism that does not depend on another for food or a place to live
11. having right and left halves that are near mirror images of each other
12. animal that doesn’t have a backbone
13. opening at the end of digestive tract where wastes leave

Directions: Write the correct adaptation next to its description.

14. eats plants and animals
15. the non-venomous king snake looks like the venomous coral snake
16. stripes help tigers hide in tall grasses
17. eats only plants or parts of plants
18. captures and kills other animals for food
Chapter Review (continued)

Part B. Concept Review

Directions: List five characteristics of animals.

1. __________________________
2. __________________________
3. __________________________
4. __________________________
5. __________________________

Directions: Complete the table by describing the four groups of simple animals listed.

<table>
<thead>
<tr>
<th>Trait</th>
<th>Sponges</th>
<th>Cnidaria</th>
<th>Flatworms</th>
<th>Roundworms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body plan</td>
<td>6.</td>
<td>7.</td>
<td>8.</td>
<td>9.</td>
</tr>
<tr>
<td>Cell organization</td>
<td>14.</td>
<td>15.</td>
<td>16.</td>
<td>17.</td>
</tr>
<tr>
<td>Feeding</td>
<td>22.</td>
<td>23.</td>
<td>24.</td>
<td>25.</td>
</tr>
</tbody>
</table>

Directions: Use the words below to identify the examples given.

sponges  cnidarians  flatworms  roundworms

26. probably evolved separately: ________________
30. planarians: __________________________
27. jellyfish: ________________
31. coral: __________________
28. tapeworms: ________________
32. heartworms: __________________
29. nematodes: ________________
33. sea anemones: __________________

Directions: Answer the following question using complete sentences.

34. Explain the importance of coral reefs.

________________________________________
________________________________________
________________________________________
I. Testing Concepts

Directions: Match the description in the first column with the term in the second column by writing the correct letter in the space provided. Some items in the second column may not be used.

_____ 1. animals without a backbone          a. bilateral symmetry
_____ 2. body parts arranged in a circle like a wheel hub b. tentacle
_____ 3. remains attached to one place for life span c. carnivore
_____ 4. arm-like structure with stinging cells d. hermaphrodites
_____ 5. replacing body parts
_____ 6. animals that produce both sperm and eggs
_____ 7. eats plants or plant parts
_____ 8. body plan that is shaped like a tube or vase
_____ 9. body plan that is bell-shaped
_____ 10. eats only other animals

Directions: For each of the following, write the letter of the term or phrase that best completes each sentence.

_____ 11. A vertebrate is defined as having a(n) _______.
       a. anus          b. backbone          c. brain          d. nervous system

_____ 12. An animal with _______ has its body parts arranged in the same way on both sides of its body.
       a. asymmetrical form          c. radial symmetry
       b. bilateral symmetry          d. spherical symmetry

_____ 13. Early scientists classified sponges as _______.
       a. cnidarians          b. parasites          c. plants          d. animals

_____ 14. Most sponges have _______.
       a. asymmetrical form          c. radial symmetry
       b. bilateral symmetry          d. spherical symmetry

_____ 15. The body of a sponge is covered with many small openings called _______.
       a. cilia          b. nerve nets          c. flagella          d. pores

_____ 16. Their _______ help move water through a sponge.
       a. collar cells          b. mouths          c. spongins          d. tentacles

_____ 17. The bodies of many sponges contain sharp structures called _______.
       a. flagella          b. pores          c. spicules          d. collar cells

_____ 18. Sponges reproduce _______.
       a. only asexually          c. only sexually
       b. only with buds          d. asexually and sexually
### Chapter Test (continued)

19. Most cnidarians live in ________.  
   a. lakes  
   b. oceans  
   c. ponds  
   d. rivers

20. All cnidarians have ________.  
   a. asymmetrical form  
   b. bilateral symmetry  
   c. radial symmetry  
   d. spherical symmetry

21. Cnidarians reproduce ________.  
   a. only asexually  
   b. only with buds  
   c. only sexually  
   d. asexually and sexually

22. Flatworms and roundworms have ________.  
   a. asymmetrical form  
   b. bilateral symmetry  
   c. radial symmetry  
   d. spherical symmetry

23. Tapeworms lack ________.  
   a. a digestive system  
   b. hooks and suckers  
   c. male reproductive organs  
   d. female reproductive organs

24. Heartworm is a disease in dogs caused by ________.  
   a. flatworms  
   b. planarians  
   c. roundworms  
   d. tapeworms

25. Schistosomiasis is a human disease caused by ________.  
   a. heartworms  
   b. nematodes  
   c. tapeworms  
   d. blood flukes

### II. Understanding Concepts

**Skill: Graphing**

1. Your class went on a field trip to gather invertebrates. The class was able to find four sponges, two hydra, two planarians, three sea anemones, six jellyfish, and eight corals. Your teacher tells the class to imagine that you were also able to collect five flukes, two tapeworms, seven heartworms, and eight other nematodes. Your assignment is to graph the total number of organisms belonging to the groups in the bar graph below.
Chapter Test (continued)

Skill: Comparing and Contrasting

Directions: Descriptions of four groups are listed in the table below. Complete the table by writing the group name flatworms, roundworms, cnidarians, or sponges.

<table>
<thead>
<tr>
<th>Simple Animals</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>simple, hollow-tubed body; pores, collar cells, spicules</td>
</tr>
<tr>
<td>3.</td>
<td>polyp or medusa body; stinging cells, nerve net, tentacles</td>
</tr>
<tr>
<td>4.</td>
<td>flat body; three tissue layers; some have mouth, pharynx</td>
</tr>
<tr>
<td>5.</td>
<td>tube within a tube body; three tissue layers; mouth, anus</td>
</tr>
</tbody>
</table>

Skill: Outlining

Directions: Complete the following outline.

I. Sponges
   A. Body Parts for Feeding
      1. 
      2. collar cells
   B. Reproduction
      1. 
      2. 
      3. regeneration

II. Cnidarians
   A. Body Parts for Feeding
      1. 
      2. mouth
   B. Reproduction
      1. 
      2. asexual
Chapter Test (continued)

III. Applying Concepts
Directions: List five characteristics of a planarian that make it an animal.

1. 
2. 
3. 
4. 
5. 

IV. Writing Skills
Directions: Answer the following questions using complete sentences.

1. Explain why coral reefs should be protected from damage by human activity.

2. Explain why sponges were first classified as plants, but are really animals.

3. What is the difference between a free-living organism and a parasitic organism?

4. What characteristic makes an animal a vertebrate?

5. List three examples of invertebrates.
Transparency Activities
Scientists divide all living things into six kingdoms. For example, there are different kingdoms for plants, animals, and bacteria. At first, assigning a living thing to a kingdom may seem pretty easy, but sometimes it gets a little tricky. Where do you think this microscopic living thing belongs?

1. Describe the organism in the photo.
2. What are some characteristics that all animals share? Do you think the organism in the photo has these characteristics?
3. Where do you think this organism lives?
Sea-Floor Scrubbers

What you see here are the remains of a sponge called a Venus’ flower basket. It is a member of a group of sponges that live in very deep water; as a consequence, relatively little is known about them. One interesting fact, though, is that the Venus’ flower basket contains two shrimp in its inner chambers. The trapped shrimp and the sponge help each other survive.

1. What are some uses of sponges?
2. Do you think a sponge is a plant or an animal? Explain.
3. How do you think the sponge and shrimp help each other?
This is a microscopic roundworm. It lives in the soil. Some worms can be very destructive to crops, and scientists are finding ways to limit crop damage caused by these harmful roundworms.

1. Some species of roundworms are parasites. What is a parasite?
2. What part of the plant do you think this worm damages?
3. How are some roundworms beneficial?
**Teaching Transparency Activity**

**Animal Classification**

- **Vertebrates**
  - **Roundworms**
  - **Invertebrates**
    - **Cnidarians**
      - **Sponges**
    - **Flatworms**
    - **Mollusks**
    - **Arthropods**
      - **Echinoderms**
      - **Annelids**
      - **Roundworms**
      - **Cnidarians**
  - **Animals**
Teaching Transparency Activity (continued)

1. Animals are classified into how many groups?

2. What groups do the simplest animals belong to?

3. Which are more numerous, animals with a vertebrate or animals without a vertebrate?

4. What classifies an animal as an invertebrate?

5. What is symmetry?

6. What are organisms with no definite shape called?
Introduction to Animals

Assessment Transparency Activity

Directions: Carefully review the table and answer the following questions.

<table>
<thead>
<tr>
<th>Animal</th>
<th>Mass (kg)</th>
<th>Diet</th>
<th>Life span (yrs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>North American black bear</td>
<td>up to 193</td>
<td>fruit, nut, meat</td>
<td>25.0</td>
</tr>
<tr>
<td>White-tailed deer</td>
<td>up to 113</td>
<td>twigs, fungi, grass</td>
<td>16.5</td>
</tr>
<tr>
<td>Reindeer</td>
<td>up to 180</td>
<td>grass, lichen, mushrooms</td>
<td>15.0</td>
</tr>
<tr>
<td>Coyote</td>
<td>up to 23</td>
<td>fruit, meat, insects</td>
<td>18.0</td>
</tr>
<tr>
<td>Mountain lion</td>
<td>up to 103</td>
<td>mostly deer</td>
<td>18.0</td>
</tr>
</tbody>
</table>

1. According to the table, a North American black bear weighs about the same as a ___.
   A mountain lion        C reindeer
   B white tail deer      D coyote

2. The animal that has the same life span as a coyote is a ___.
   F North American black bear H reindeer
   G white tail deer       J mountain lion

3. Which of the following animals mostly eats meat?
   A White tail deer       C North American black bear
   B Reindeer              D Mountain lion