Name _____ Date _____ Class _____

What Is a Vertebrate? (pp. 368–371)

This section explains the characteristics of animals with backbones.

Use Target Reading Skills

After you read the section, reread the paragraphs that contain definitions of Key Terms. Use all the information you have learned to write a definition of each Key Term in your own words below.

chordate:

_____

_____

notochord:

_____

_____

vertebra:

_____

_____

ectotherm:

_____

_____

endotherm:

_____

_____

Characteristics of Chordates (pp. 368–369)

1. What characteristics do all chordates share?

_____

_____

_____

2. A flexible rod that supports an animal's back is called a(n) _____.

3. Is the following sentence true or false? In vertebrates, part or all of the notochord is replaced by a backbone. _____

4. Is the following sentence true or false? Pouches in the throat area disappear before birth in all chordates. _____

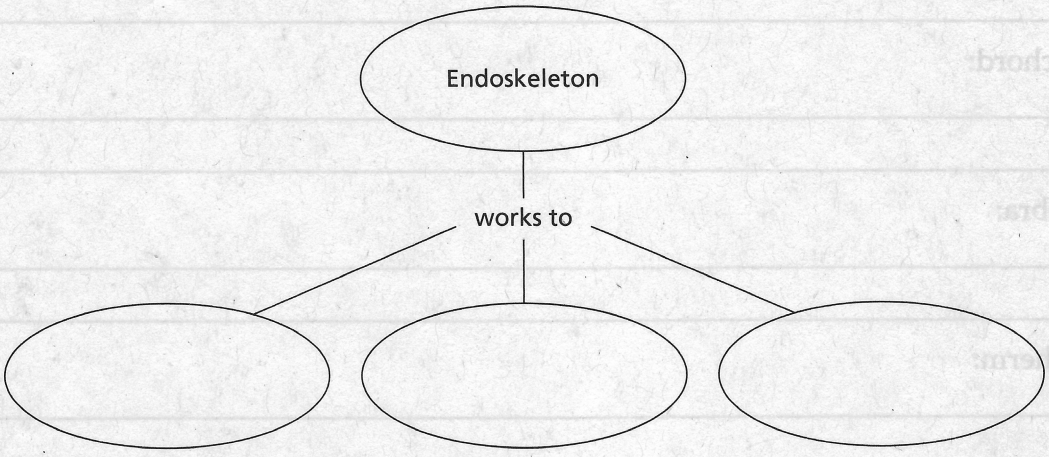
What Is a Vertebrate? *(continued)*

Characteristics of Vertebrates (pp. 369–370)

5. The backbone is formed by many similar bones, called _____, which are lined up in a row.

6. A vertebrate's backbone is part of a(n) _____, or internal skeleton.

7. Complete the concept map to show the functions of the endoskeleton.



Keeping Conditions Stable (pp. 370–371)

8. Circle the letter of each animal that has a body temperature close to the temperature of its environment.
   - **a.** bird
   - **b.** fish
   - **c.** reptile
   - **d.** mammal

9. What is an ectotherm?

   _____

   _____

   _____

10. Is the following sentence true or false? A turtle has the same body temperature when it's lying in the sun and when it's swimming in a cool river. _____

11. An animal whose body regulates its own temperature by controlling the internal heat it produces is a(n) _____.

12. Circle the letter of adaptations that help endotherms maintain their body temperature.
    - **a.** spines
    - **b.** fur
    - **c.** sweat glands
    - **d.** cartilage

13. Is the following sentence true or false? Ectotherms can live in a greater variety of environments than endotherms can.

    _____

Fishes (pp. 374–380)

This section describes the three groups of fishes, how fishes use their gills to get oxygen, and how people use fish.

Use Target Reading Skills

Before you read, preview the diagram of a bony fish in your textbook. Then write two questions that you have about the diagram in the graphic organizer below. As you read, answer your questions.

Structure of a Fish

Q. What is a swim bladder?
A.
Q.
A.

Characteristics of Fishes (pp. 375–377)

1. What is a fish?

_____

_____

2. Circle the letter of each characteristic of fishes.
   - **a.** gills
   - **b.** endotherm
   - **c.** scales
   - **d.** ectotherm

3. Fishes get oxygen from _____.
4. Most fishes have _____ fertilization; the eggs are fertilized outside of the female's body.
5. Circle the letter of each sentence that is true about fishes.
   a. Fins help fishes swim by providing a large surface area to push against water.
   b. Fishes have an open circulatory system.
   c. Fishes cannot see well in water.
   d. Fishes have keen senses of touch, smell, and taste to help them catch food.
6. Is the following sentence true or false? No fishes give birth to live young.
   _____

Jawless Fishes (p. 377)

7. List three groups of fishes.
   a. _____
   b. _____
   c. _____
8. Circle the letter of each sentence that is true about jawless fishes.
   a. Jawless fishes do not have scales.
   b. Jawless fishes have skeletons made of bones.
   c. Sharks are jawless fishes.
   d. Some jawless fishes are parasites.

Cartilaginous Fishes (p. 378)

9. The skeletons of cartilaginous fishes are made of _____.
10. Circle the letter of each characteristic of cartilaginous fishes.
    a. jaws
    b. skeletons made of cartilage
    c. scales
    d. bones

Fishes *(continued)*

11. Is the following sentence true or false? Cartilaginous fishes are all herbivores. _____

12. How do rays and skates obtain food?

_____

_____

Bony Fishes (pp. 379–380)

Match the parts of bony fishes with their functions.

Part	Function
____ 13. fins	a. Helps stabilize the fish at different depths in the water
____ 14. scales	b. Cover the body by overlapping each other
____ 15. gill pocket	c. Holds the gills
____ 16. swim bladder	d. Help the fish stay upright in the water

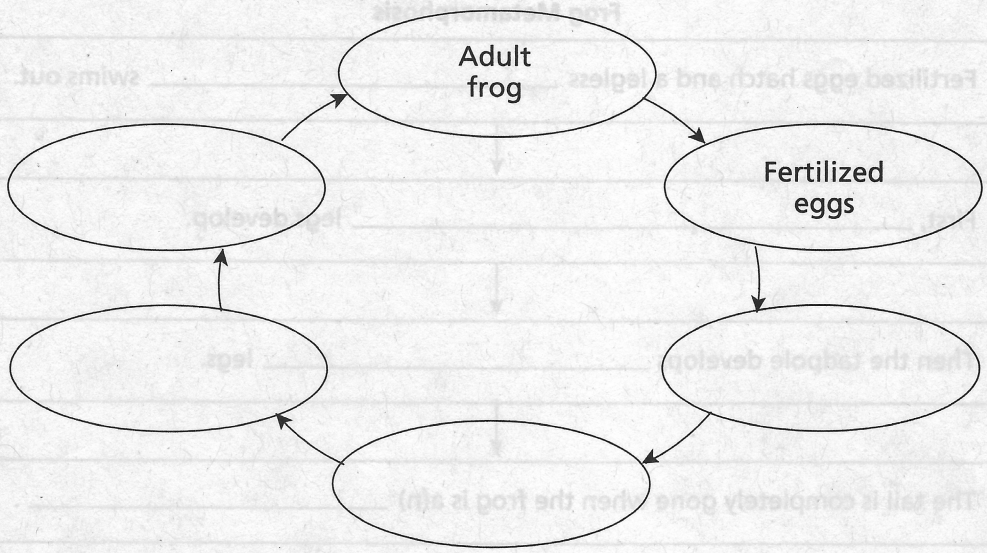
Amphibians (pp. 382–386)

This section describes the characteristics of amphibians.

Use Target Reading Skills

As you read, fill in the cycle diagram below to show the different stages of a frog's life cycle. Write each step of the process in a separate circle.

Frog Metamorphosis



What Is an Amphibian? (pp. 382–383)

1. What is an amphibian?

_____

_____

Amphibians *(continued)*

2. Amphibians with long, slender bodies that keep their tails as adults are called _____.

3. Is the following sentence true or false? Most amphibians undergo metamorphosis during development. _____

4. Complete the flowchart to show the steps in the metamorphosis of a frog.

Frog Metamorphosis

Fertilized eggs hatch and a legless _____ swims out.

↓

First, _____ legs develop.

↓

Then the tadpole develops _____ legs.

↓

The tail is completely gone when the frog is a(n) _____.

Living on Land (pp. 384–386)

5. Circle the letter of each sentence that is true about adaptations for living on land.
   a. Adult amphibians have lungs.
   b. Adult amphibians have a two-chambered heart.
   c. A land animal must have a strong skeleton to support the body against the pull of gravity.
   d. Adult amphibians have muscular limbs adapted for crawling on land.

6. How do salamanders get food?

_____

_____

7. List two ways that a frog's coloring is helpful.

_____

_____

8. How are frogs and toads adapted for hopping and leaping?

_____

_____

_____

9. An animal's _____ is the specific environment in which it lives.

10. The destruction of amphibian _____ is causing populations of amphibians to decrease.

11. Why are amphibians especially sensitive to changes in the environment?

_____

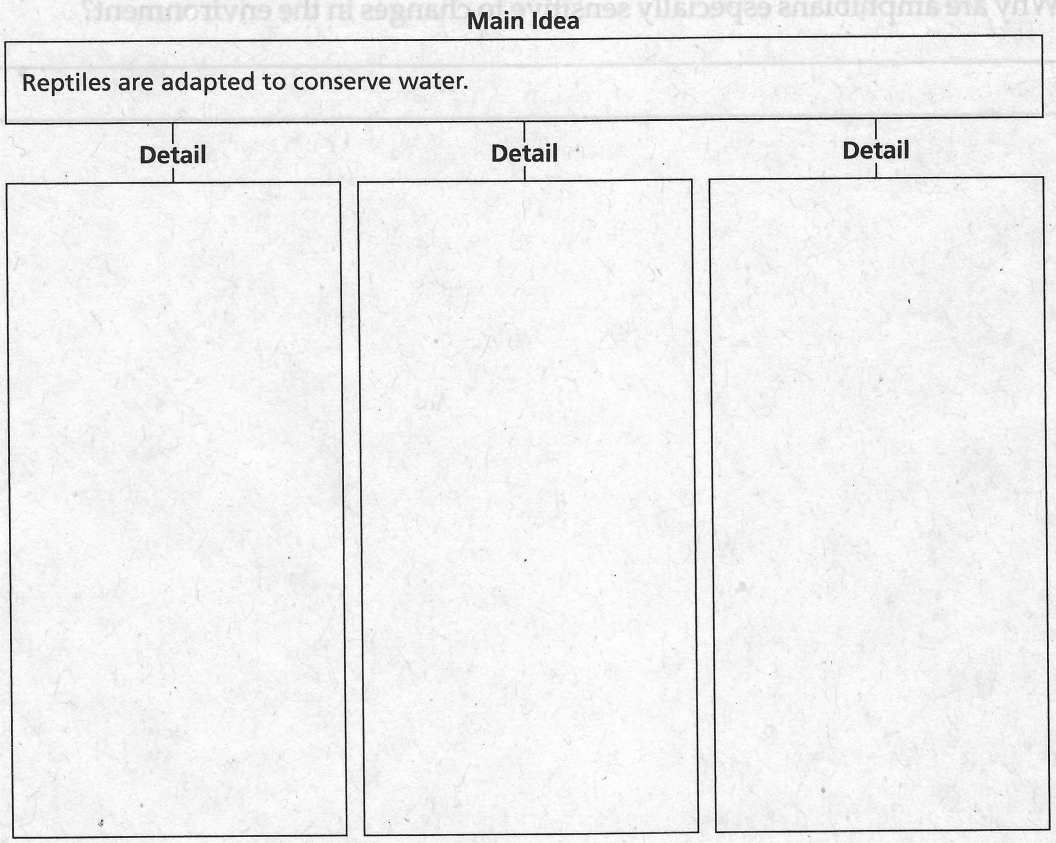
_____

Reptiles (pp. 387–394)

This section describes adaptations that enable reptiles to live their entire lives on land. It also tells about the major groups of reptiles.

Use Target Reading Skills

As you read the information under the heading titled Adaptations for Life on Land, *write the main idea in the graphic organizer below. Then write three supporting details that give examples of the main idea.*



Adaptations for Life on Land (pp. 388–389)

1. What is a reptile?

_____

_____

2. Circle the letter of the animal that is NOT a reptile.
   - **a.** snake
   - **b.** alligator
   - **c.** lizard
   - **d.** salamander

3. Is the following sentence true or false? Reptiles were the first vertebrates to be well adapted to live their entire lives on land.

_____

4. Reptiles get their oxygen from the _____.

5. What are two functions of a reptile's scaly skin?

_____

_____

6. How do the kidneys keep reptiles from losing water?

_____

_____

7. What adaptations does a reptile's egg have to keep it from drying out?

_____

_____

_____

Lizards and Snakes (pp. 390–391)

8. What characteristics do both lizards and snakes have?

_____

_____

_____

_____

9. Circle the letter of each characteristic that snakes have.
   - **a.** no legs
   - **b.** eyelids
   - **c.** external ears
   - **d.** kidneys

Reptiles *(continued)*

10. Is the following sentence true or false? All snakes are carnivores.
_____

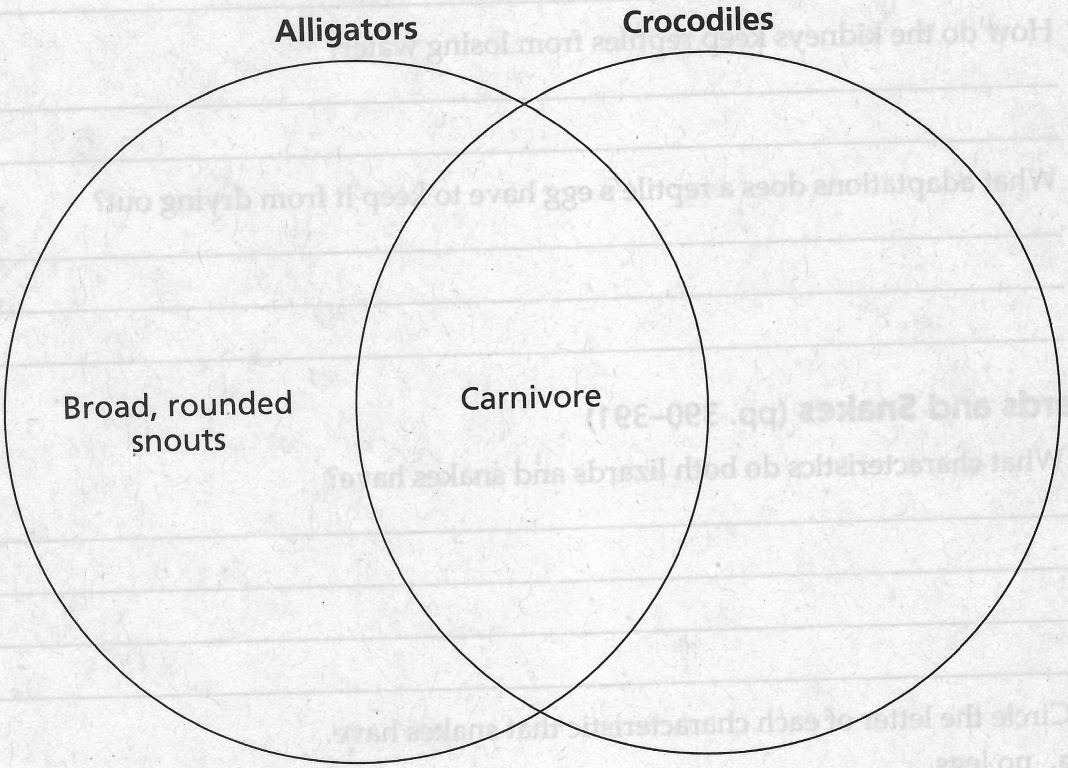
11. Is the following sentence true or false? All snakes have venom glands.
_____

12. Describe how snakes move.
_____
_____
_____

Alligators and Crocodiles (p. 392)

13. Is the following sentence true or false? Alligators, crocodiles, and their relatives are the largest living reptiles. _____

14. Complete the Venn diagram to show the similarities and differences between alligators and crocodiles.



Turtles (p. 393)

15. What is a turtle?

_____

_____

16. Is the following sentence true or false? All turtles can pull their head, legs, and tail inside their shell. _____

17. Instead of teeth, turtles have sharp-edged _____.

Extinct Reptiles—The Dinosaurs (p. 394)

18. Circle the letter of each sentence that is true about dinosaurs.
    a. Reptiles became extinct about 65 million years ago.
    b. Some dinosaurs might have been endotherms.
    c. Dinosaurs were the earliest vertebrates to have legs positioned directly under their bodies.
    d. Most carnivorous dinosaurs walked on four legs.

19. Some biologists think that _____ descended from certain small dinosaurs.

Vertebrate History in Rocks (pp. 395–399)

This section explains how fossils form and how scientists use fossils to infer how living things have changed over time.

Use Target Reading Skills

Before you read, ask what *and* how *questions for each heading. As you read, write the answers to your questions.*

Vertebrate History in Rocks

Question	Answer
How do fossils form?	

What Are Fossils? (pp. 396–397)

1. What is a fossil?

_____

_____

2. Circle the letter of each sentence that is true about fossils.
   a. Some fossils are imprints in rocks.
   b. Some fossils are the remains of bones or other parts of living things.
   c. Because most living tissue decays rapidly, many organisms are preserved as fossils.
   d. Every organism has been preserved as a fossil.
3. Fossils occur most frequently in _____ rock.
4. What are two ways that sediments can build up?
   a. _____
   b. _____

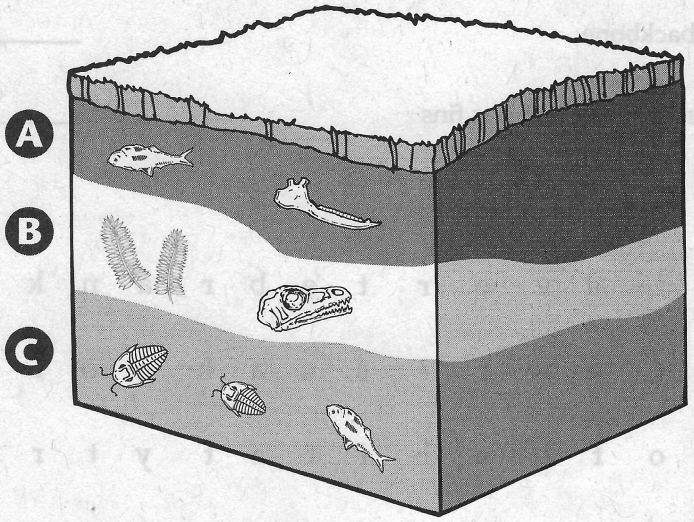
5. Is the following sentence true or false? When the traces of living things are trapped in sediments, they are sometimes preserved as fossils.
_____

Interpretation of Fossils (pp. 398–399)

6. Scientists who study extinct organisms, examine fossil structure, and make comparisons to present-day organisms are called _____.

7. What can scientists learn from studying fossils?
_____
_____

8. Which rock layer in the diagram below is the oldest and which is the youngest?
Oldest layer: _____ Youngest layer: _____



9. What other method do scientists use to determine the age of a fossil?
_____
_____