

Wed	4/26	Activities
<b>Learning Target</b>	Students will describe the adaptations of amphibians that help them live on land. (25.4) Students will summarize the reproduction and development of amphibians. (25.4) Students will describe two important characteristics of amniotes that help them retain water. (25.5)	
<b>Class Activities</b>	*25.4-25.5 Notes*	
	*25.4-25.5 Study guide WS*	
	Water plants...can take plants home (hand out test review)	

\*attached below (scroll down)\*

**Website: my.hrw.com**

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Biology – Sec. 25.4 & 25.5 Notes

## **Sec. 25.4 KEY CONCEPT**

### **Amphibians evolved from lobe-finned fish.**

#### **➤ Amphibians were the first animals with four limbs.**

- Tetrapods are vertebrates that have four limbs.
- Vertebrates that lack four limbs evolved from limbed ancestors.
- Amphibians are animals that can live both on land and in water.
- A number of adaptations allow amphibians to live on land.
  - large shoulder and hip bones
  - mobile, muscular tongue
  - middle ear
  - breathe through skin or with gills or lungs

#### **➤ Amphibians return to the water to reproduce.**

- Amphibians use many strategies to keep their eggs wet.
    - lay eggs directly in water
    - lay eggs on moist ground
    - wrap eggs in leaves
    - brood eggs in pockets on the female's back
  - Tadpoles are aquatic larvae of frogs.
  - During metamorphosis, tadpoles develop into their adult form.
  - Not all amphibians undergo metamorphosis.
- **Modern amphibians can be divided into three groups.**
- **Salamanders** have a long body, four walking limbs, and a tail.
  - There are over 300 species of salamanders.
  - **Frogs** are the largest amphibian group and include toads.
  - There are over 3000 species of frogs.
  - Glands in the skin of frogs and toads contain poisons that help to protect them from predators.
  - **Caecilians** are legless, burrowing, tropical amphibians.
  - There are 160 species of caecilians.

## **Sec. 25.5 KEY CONCEPT**

**Reptiles, birds, and mammals are adapted for life on land.**

➤ **Amniotes can retain moisture.**

- An amniote develops inside a thin, tough, membranous sac as an embryo or fetus.
- Several characteristics help amniotes prevent water loss.
  - keratin forms a hydrophobic layer
  - larger size of kidneys and intestines increases water absorption
- **Amniotes do not need to return to water to reproduce.**
- The amniotic egg is an almost completely waterproof container.
  - prevents embryo from drying out as it develops
  - each egg represents a large investment of energy
- Not all amniotes lay eggs.
  - reptiles such as garter snakes retain their eggs
  - most mammals develop inside the mother's reproductive tract
- The placenta is a membranous organ that develops in female mammals during pregnancy.
  - lines the uterine wall and partially envelops the fetus
  - carries nutrients from mother to embryo and removes wastes

## Section 25.4: Amphibians

# Study Guide

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### KEY CONCEPT

Amphibians evolved from lobe-finned fish.

### VOCABULARY

tetrapod

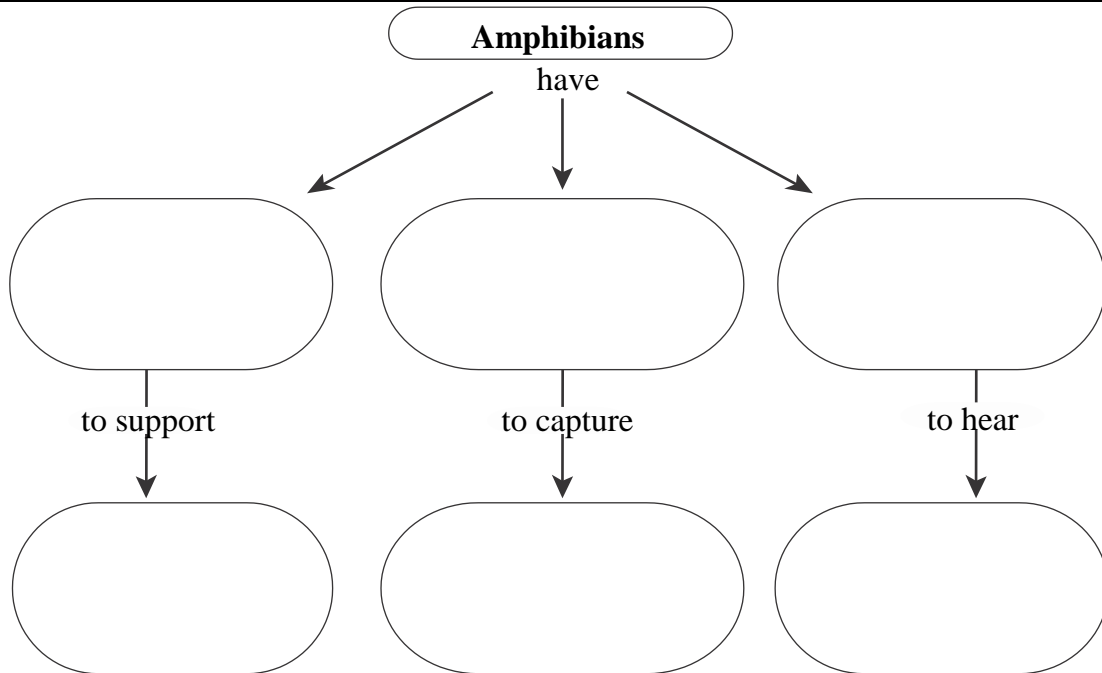
tadpole

amphibian

**MAIN IDEA:** Amphibians were the first animals with four limbs.

**Fill in the blank with the word or phrase that best completes the sentence.**

1. A tetrapod is a vertebrate that has \_\_\_\_\_ limbs.
2. Amphibians are animals that can live both on \_\_\_\_\_ and in \_\_\_\_\_.
3. Amphibians can use different methods to breathe. Some breathe through their \_\_\_\_\_, while others breathe with the use of \_\_\_\_\_ or lungs.
4. Use the following words and phrases to complete the following concept map about amphibian adaptations.
  - a. food
  - b. large shoulder and hip bones
  - c. middle ear
  - d. mobile, muscular tongue
  - e. more weight
  - f. outside of water



**MAIN IDEA:** Amphibians return to the water to reproduce.

**Circle the word or phrase that best completes the statement.**

5. Amphibians cannot travel too far away from a source of water, because they risk drying out. Water is constantly evaporating from their *thin / thick* and *dry / wet* skin.

**Circle the letters for all of the statements that are true about amphibians.**

6. Amphibians use several strategies to keep their eggs moist.
- a. Some carry eggs in pouches on their backs.
  - b. Some carry eggs in special sacs called tetrapods.
  - c. Some lay eggs directly in another amphibian's nest.
  - d. Some lay eggs directly in water or on moist ground.
  - e. Some wrap eggs in leaves.
7. The following sentences describe the changes a tadpole goes through during metamorphosis into an adult frog.

**Circle the word or phrase that best completes the sentence.**

The gills are *developed / reabsorbed* and the lungs develop.

The circulatory system is reorganized to send *blood / lymph* to the lungs.

The tail fin is *created / reabsorbed*.

The *limbs / gills* grow and the skeleton, muscle, and nervous system are reorganized.

The digestive system is rebuilt to handle a *carnivorous / herbivorous* diet.

**MAIN IDEA:** Modern amphibians can be divided into three groups.

**Write the letters for the descriptions of each amphibian group in the chart below.**

8. a. are legless burrowing amphibians.
- b. are the largest group of amphibians.
- c. have a long body.
- d. have banded bodies.
- e. have bodies adapted for jumping.
- f. have four walking limbs and a tail.
- g. live in nearly every environment.
- h. live in the tropics.
- i. walk side to side.

Group	Description
Salamanders	are carnivorous. _____
Frogs	have a tailless body, long muscular hind limbs, webbed feet, exposed eardrums, and bulging eyes in their adult form. _____
Caecilians	are predators. _____

## Vocabulary Check

**Fill in the blank with the word or phrase that best completes the sentence.**

9. If the *suffix -pod* means “foot,” then the term *tetrapod* means having \_\_\_\_\_ feet.
10. A(n) \_\_\_\_\_ can live both on land and in the water. In a similar manner, an amphibious vehicle can be driven both on the road and in the water.

## Section 25.5: Vertebrates on Land

# Study Guide

### KEY CONCEPT

Reptiles, birds, and mammals are adapted for life on land.

### VOCABULARY

amniote	amniotic egg
keratin	placenta

**MAIN IDEA:** Amniotes can retain moisture.

**Circle the word or phrase that best completes the statement.**

1. An amniote is a vertebrate that has a thin, tough, membranous sac that encloses the embryo or fetus during *birth / development*.
2. Humans *are / are not* amniotes, because they are *mammals / people*.
3. Keratin is a protein that binds to lipids inside the cell. Keratin creates a *permeable / waterproof* layer that keeps water *inside / outside* the animal from reaching the skin. Therefore, keratin helps an amniote to retain moisture.
4. An amniote's kidneys and intestines contain tissues that *reabsorb / release* water. These organs are bigger in amniotes than in amphibians, so the *smaller / larger* surface area of their tissues lets amniotes absorb more water internally.
5. List three examples of familiar animals that are amniotes.  
\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

**MAIN IDEA:** Amniotes do not need to return to water to reproduce.

**Fill in the blank with the word or phrase that best completes sentence.**

6. The amniotic egg allows amniotes to live permanently on land, because it is an almost completely waterproof container that keeps the \_\_\_\_\_ from drying out as it develops.
7. Rattlesnakes retain their eggs until they hatch. Rattlesnakes use this method to protect the eggs from being eaten by \_\_\_\_\_.

8. The placenta is a membranous organ that develops in female mammals during pregnancy. Its function is to carry \_\_\_\_\_ from the mother to the embryo and to remove \_\_\_\_\_ from the embryo.

## Vocabulary Check

Choose a term from the box below that best fits the description.

amniote	amniotic egg	keratin	placenta
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- \_\_\_\_\_ 9. a vertebrate that has a thin, tough, membranous sac that encloses the embryo or fetus during development
- \_\_\_\_\_ 10. a protein that binds to lipids inside a skin cell, forming a water-repellent layer that keeps water from escaping
- \_\_\_\_\_ 11. an almost completely waterproof container that keeps the embryo within from drying out
- \_\_\_\_\_ 12. a membranous organ that develops in female mammals during pregnancy



## Be Creative

13. Draw a cartoon that illustrates the benefits of the amniotic egg.

