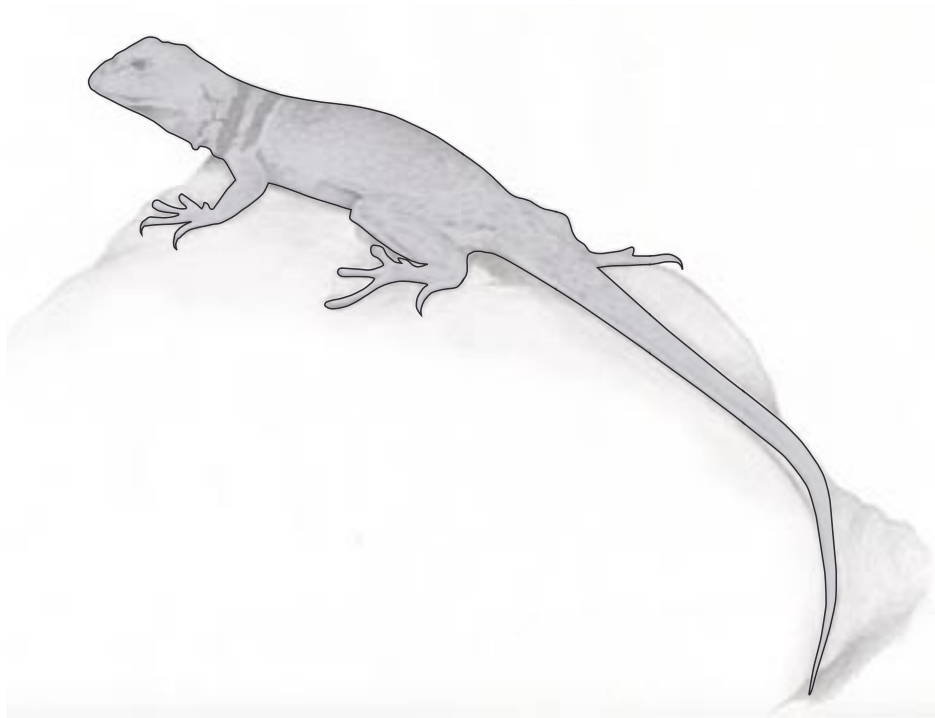


Amazing Amphibians and Reptiles



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Student Learning Objectives

Upon viewing the video and completing the enclosed activities, students will be able to do the following:

- Describe some of the key characteristics of amphibians.
- Describe the process of metamorphosis in a frog.
- Differentiate between a frog and a toad.
- Explain that many adult amphibians can carry out the process of respiration through their lungs and through their moist skin.
- Create a simple diagram of the double loop circulatory system found in amphibians and reptiles.
- Describe some of the features amphibians needed to adapt to life on land. Examples include the development of legs for walking and lungs to breathe air.
- Cite the three major orders of amphibians: Anura, Urodela, and Apoda.
- Describe some of the key characteristics of amphibians in the order Anura. Also list some specific examples of organisms in this order.
- Explain some of the features of members of the order Urodela. Cite some specific examples of organisms in this order.
- List some of the key characteristics of animals in the order Apoda. Also cite some examples of members of the order Apoda.
- Generally describe the important features common to most reptiles.
- Explain some of the key characteristics reptiles have that enable reptiles to survive entirely on land. Examples include a watertight skin covered with overlapping scales to prevent water loss, and the development of the amniotic egg.
- Describe how ectothermy limits the capabilities of amphibians and reptiles.
- Briefly describe some of the hypotheses that attempt to explain the extinction of dinosaurs.
- List the four major reptilian orders including: Rhynchocephalia, Chelonia, Squamata, and Crocodilia.
- Briefly describe some of the key characteristics of each of the four major orders of reptiles. Also list one or more specific examples of animals in these orders.

Assessment

Preliminary Assessment (p. 14-15):

The Preliminary Assessment is an assessment tool designed to gain an understanding of students' preexisting knowledge. It can also be used as a benchmark upon which to assess student progress based on the objectives stated on the previous pages.

Post Assessment (p. 16-17):

The Post Assessment can be utilized as an assessment tool following student completion of the program and student activities. The results of the Post Assessment can be compared against the results of the Preliminary Assessment to assess student progress.

Video Review (p. 18):

The Video Review can be used as an assessment tool or as a student activity. There are two sections. The first part contains questions displayed during the program. The second part consists of a ten-question video assessment to be answered at the end of the video.

Introducing the Program

Before showing the video program to your students ask them to list some examples of amphibians that live in your community. Write the examples on the board. Next, have them cite examples of amphibians that live in other parts of the country. Write the examples on the board. Then ask them for examples of amphibians that live in other parts of the world. Write their ideas on the board. Make sure the list includes examples of frogs, toads, and salamanders. Write the major amphibian orders on the board: Anura, Urodela, and Apoda. Tell students to pay close attention to the program to see how the examples they listed fall into these orders.

Tell students to take a minute to study the list of amphibians on the board. Ask them what characteristics they have in common. As a class see if you can come up with a list of characteristics common to most amphibians. The video will help students develop their list of characteristics.

Next, ask students to list examples of reptiles. Ask them: What are the largest animals to have ever roamed Earth? How are modern-day reptiles similar and different from ancient dinosaurs? Ask students to describe some of the characteristics common to most reptiles. After viewing the video ask students how reptiles and amphibians are different from each other.

Program Viewing Suggestions

The student master “Video Review” (p. 19) is provided for distribution to students. You may choose to have your students complete this master while viewing the program or do so upon its conclusion.

The program is approximately 20 minutes in length and includes a ten-question video assessment. Answers are not provided to the Video Assessment in the video, but are included in this manual on page 13. You may choose to grade student assessments as an assessment tool or to review the answers in class.

The video is content-rich with numerous vocabulary words. For this reason you may want to periodically stop the video to review and discuss new terminology and concepts.

Video Script: Amazing Amphibians and Reptiles

1. Perhaps you have been startled by a snake slithering in the grass.
 2. Maybe you've seen turtles basking in the sun on a log.
 3. If you live in a warm climate, you may have seen prehistoric looking alligators.
 4. Or, maybe you've seen frogs or salamanders in a nearby pond.
 5. These animals are examples of amphibians and reptiles.
 6. What exactly are amphibians and reptiles?
 7. What are their general characteristics? What are their origins?
 8. How are they different from each other? How are they different from other vertebrate animals? And, what are some of the various groups of amphibians and reptiles?
 9. During the next few minutes we are going to answer these questions, and others as we explore the fascinating features of amphibians and reptiles.
- 10. Graphic Transition – Amphibian Characteristics**
11. If you've ever seen frogs, salamanders or toads then you are familiar with examples of a diverse and abundant group of vertebrates called amphibians.
 12. Most present-day amphibians are relatively small, and go largely unnoticed by humans.
 13. But, amphibians are among the most numerous terrestrial vertebrates, and have become quite successful at adapting to many different habitats.
 14. So, what exactly is an amphibian?
 15. An amphibian is a vertebrate animal that is well adapted to both life in water and on land.
 16. While some amphibians, such as toads, live their entire adult life on land,...
 17. ...others such as this frog dwell in or around water.
 18. A key characteristic of most amphibians, but not all, is that they live part of their life in the water,...
 19. ...and part of their life on land.
 20. Most amphibians lay eggs in the water that eventually hatch into a distinct larval form that is quite different from its adult form.
- 21. You Observe!** Describe this frog larva.
22. This frog larva, called a tadpole, has a central body, no legs, and a tail. Tadpoles breathe through gills and in some ways they are similar to fish.
 23. As time goes by, however, the tadpole goes through a process called metamorphosis. Metamorphosis is a series of changes that young animals undergo as they become adults.
 24. Over time, legs emerge, the tail recedes, and lungs develop that enable them to live life on land as adult frogs.
 25. Most amphibians go through the process of metamorphosis.
 26. Adult amphibians possess forelimbs and hind limbs.
 27. The hind legs in frogs are adapted for swimming in the water, and jumping on land.
 28. Most adult amphibians possess two lungs. Air enters the body through a pair of nostrils.
 29. Most amphibians also have the ability to breathe through their skin supplementing respiration by the lungs.

Video Script: Amazing Amphibians and Reptiles

30. Amphibians possess a three-chambered heart that pumps blood throughout the body via a network of blood vessels.
31. They possess a double loop circulatory system with one loop of vessels going to the lungs, and another loop that consists of blood vessels spread throughout the body.
32. The amphibian digestive tract is similar to that of humans in that it,...
33. ...includes a mouth, esophagus, stomach, small intestine, and large intestine.
34. Like humans, amphibians have a central nervous system and a peripheral nervous system.
35. Generally speaking, the brain is not as well developed as in higher vertebrates.
36. Many amphibians have well-developed senses of which a number function in both aquatic and terrestrial environments.
- 37. Graphic transition – Origin and Diversity of Amphibians**
38. Early amphibians most likely evolved from lobe-finned fishes.
- 39. You Decide!** What features did amphibians need to develop to adapt to life on land?
40. In order to adapt to life on land amphibians developed legs enabling them to walk and lungs enabling them to breathe.
41. The first amphibians evolved about 370 million years ago.
42. Presently there are over 6,000 species of amphibians. There are 57 different families in the three orders: Anura, Urodela, and Apoda.
43. The order Anura includes frogs and toads.
44. Both have similar body shapes including four legs, with the hind limbs adapted for jumping.
45. An important difference though, is their skin.
46. Frogs have smooth moist skin,...
47. ... whereas toads have dry, bumpy skin.
48. Toads can live in drier environments than frogs who need,...
49. ... to have their skin constantly moist.
50. Salamanders and newts belong to the order Urodela. These organisms have elongated bodies, four legs, and long tails.
51. Most live in moist places.
52. While this organism looks like a worm it is actually an amphibian in the order Apoda.
53. These tropical soil dwelling animals lack legs but possess other amphibian features.
54. Today amphibian populations are declining at an alarming rate, with some species becoming extinct. This is a serious environmental concern.
- 55. Graphic Transition – Characteristics of Reptiles**
56. If you have ever held a snake, lizard, or turtle in your hand you may have been surprised that it felt smooth and dry.
57. Reptiles, in the class Reptilia, are vertebrate animals that are well adapted to living on land.

Video Script: Amazing Amphibians and Reptiles

58. What are some of these adaptations?
59. One adaptation is a watertight skin covered with scales.
- 60. You Decide!** What purpose does this serve?
61. The watertight skin covered with scales helps prevent water loss.
62. To breathe on land, reptiles possess well-developed lungs, protected by a rib cage. This adaptation enables them to live far from water.
63. Many reptiles such as lizards, possess strong, well-positioned legs that enable them to run quickly or to climb.
64. Most reptiles are carnivores.
65. They use powerful jaws to capture their prey, but they do not thoroughly chew their food.
66. Digestion tends to be a long, slow process.
67. While reptiles require large amounts of energy to move on land, they are ectothermic, meaning they do not maintain a constant body temperature. If their body temperature is too low, they lie in the sun. And, if it is too high, they seek shade.
68. Being ectothermic limits reptiles to functioning in moderately warm temperatures.
69. Unlike amphibians, reptiles are capable of laying eggs on land.
70. This is due to the structure of the amniotic egg.
71. The amniotic egg is watertight and consists of several layers of membranes. Among other structures it includes a food source for the developing embryo in the form of a yolk.
72. Because the eggs are so well designed and developed, fewer need to be laid to successfully produce highly developed offspring.
73. Due to the success of the amniotic egg, reptiles have been able to inhabit a wide variety of terrestrial environments.
- 74. Graphic Transition – Origin and Diversity of Reptiles**
75. This is Dinosaur National Monument located in northwestern Colorado.
76. It is noted for its diverse abundance of dinosaur bones.
77. These 150 million year old bones have helped scientists to better understand these huge reptiles that lived here millions of years ago.
78. Dinosaurs were the largest animals to have ever roamed the planet. They were a highly successful group of vertebrates.
79. These species proliferated during the Mesozoic era into a wide range of dinosaur species including those that flew, swam, and walked on land.
80. Toward the end of the Mesozoic era, 65 million years ago, the dinosaurs began to decline and eventually became extinct.
81. While scientists aren't quite sure what caused the extinction of the dinosaurs, possible explanations include gradual climate change caused by the drifting of the continents or changing topography...
82. ... or a more dramatic change in the environment due to a huge meteor crashing into Earth.

Video Script: Amazing Amphibians and Reptiles

83. Graphic Transition – Diversity of Reptiles

84. There are over 8,000 different species of reptiles found throughout the world excluding the coldest regions.
85. In the class Reptilia, there are four living orders.
86. The order Rhynchocephalia includes only two living species called tuataras.
87. Tuataras are long, lizard-like animals that grow up to a half meter in length and dwell on the islands off the coast of New Zealand.
88. A group of reptiles with which you are probably more familiar are in the order Chelonia.
89. This group includes sea turtles, tortoises, and freshwater turtles.
90. **You Observe!** What is the main distinguishing feature of these animals?
91. That's right, it's a scale-like shell that surrounds the animal's body.
92. In many species the head can be drawn inside the shell protecting it from predators.
93. Legs emerging from under the shell are used for walking or swimming.
94. The large order Squamata includes lizards and snakes.
95. Even though these animals are in the same order they appear quite different from each other.
96. Most lizards are four-legged, while snakes don't have legs.
97. Both types of reptiles are covered with scales.
98. Most lizards and snakes are carnivorous, preying on insects and other small animals.
99. Lizards are an extremely diverse group found in many different environments.
100. Some common lizards include iguanas, geckos, chameleons, and anoles.
101. The American chameleon has the amazing ability to change color; to blend in with its surroundings.
102. Snakes comprise over one third of all reptiles. While most snakes are non-venomous,...
103. ...some, such as the rattlesnake, possess poisonous venom capable of paralyzing prey.
104. Snakes are capable of swallowing food that is much larger than themselves due to the fact that their jaw enables the mouth to open very wide.
105. They possess special sense organs including a forked tongue capable of sensing odor-bearing particles.
106. The order Crocodylia consists of 25 species of large, mainly aquatic reptiles including crocodiles and alligators, and lesser known gavials and caimans.
107. Animals in the order Crocodylia are the largest living reptiles on Earth ranging in length from 2.5 to over 7 meters!
108. Most possess long snouts, powerful jaws, large teeth, and long powerful tails used for swimming.
109. The majority of these reptiles feed on animals they capture with their massive jaws.
110. Crocodiles, recognized by a pointed snout, can be vicious and will attack large animals including deer, cattle, and even humans.

Video Script: Amazing Amphibians and Reptiles

111. The American Alligator, seen here in Florida with its relatively flat snout is less aggressive, feeding primarily on fish.

112. Graphic Transition – Video Review

113. During the past few minutes we explored some of the fascinating features of amphibians and reptiles.

114. We took a look at some of the common characteristics of amphibians,...

115. ...including the amazing process of metamorphosis that they go through!

116. The origins of amphibians were briefly discussed.

117. And, the main amphibian groups were highlighted.

118. We then explored some of the general features of reptiles.

119. The origins and evolution of reptiles including the dinosaurs were explored.

120. Last, the four living orders of reptiles were investigated, and some of their fascinating characteristics were highlighted.

121. Graphic Transition – Video Assessment

Fill in the correct word to complete the sentence.

1. Amphibians spend the early part of their lives in _____.
2. ___ is the process of an animal changing form at a point in its life.
3. To adapt to life on land amphibians developed legs and ___ to breathe air.
4. ___ are amphibians with elongated bodies and tails
5. The skin of reptiles is covered with _____.
6. Reptiles are ____, meaning they do not maintain a constant body temperature.
7. Reptilian embryos develop in _____ laid on land.
8. _____ were the largest reptiles to roam the Earth.
9. The order ___ includes turtles and tortoises.
10. The largest living reptiles are in the order _____.



Answer Key to Student Assessments

Preliminary Assessment (p. 15-16)

1. b - amphibians
2. a - in the water
3. d - metamorphosis
4. a - skin
5. c - lobe-finned fishes
6. d - drier and bumpier
7. b - Urodela
8. a - scales
9. c - ectothermic
10. a - amniotic egg
11. a - drying out
12. d - dinosaurs
13. c - turtles and tortoises
14. c - water
15. a - Squamata

16. Amphibians are ectothermic vertebrate animals that spend the early part of their life in water and the adult phase on land.

Adults possess a three-chambered heart, and have the ability to breathe via lungs and through the skin.

17. In metamorphosis, frogs emerge from eggs laid in the water. Larval frogs, called tadpoles, possess a tail, gills, and no limbs. Over time, legs emerge and the tail disappears. Eventually the body entirely changes into that of an adult frog.

18. Adult amphibians can breathe through lungs as well as through their moist skin.

19. To help them survive on land reptiles possess a watertight skin covered with scales to help prevent water loss. They lay amniotic eggs on land (not in water). Many reptiles also possess well-developed legs for walking on land.

20. Reptiles in the order Chelonia include: sea turtles, tortoises, and freshwater turtles. These organisms possess a shell that surrounds the body and four legs. Members of the order Squamata include snakes and lizards. Lizards are a very diverse group possessing four legs and a tail. Snakes do not possess legs.

Video Review (p. 19)

1. This frog larva, called a tadpole has a central body, no legs, and a tail.
2. In order to adapt to life on land, amphibians developed legs enabling them to walk, and lungs enabling them to breathe.
3. The purpose of watertight skin covered with scales helps prevent water loss.
4. The main distinguishing feature of these animals is a scale-like shell that surrounds the body.

Video Assessment (p. 19)

1. water
2. metamorphosis
3. lungs
4. salamanders
5. scales
6. ectothermic
7. amniotic eggs
8. dinosaurs
9. Chelonia
10. Crocodilia

Post Assessment (p. 17-18)

1. a - Squamata
2. c - lobe-finned fishes
3. a - scales
4. c - turtles and tortoises
5. a - in the water
6. a - amniotic egg
7. a - skin
8. a - drying out
9. d - metamorphosis
10. b - Urodela
11. c - water
12. d - drier and bumpier
13. c - ectothermic
14. d - dinosaurs
15. b - amphibians
16. In metamorphosis, frogs emerge from eggs laid in the water. Larval frogs, called tadpoles, possess a tail, gills, and no limbs. Over time, legs emerge and the tail disappears. Eventually the body entirely changes into that of an adult frog.
17. To help them survive on land reptiles possess a watertight skin covered with scales to help prevent water loss. They lay amniotic eggs on land (not in water). Many reptiles also possess well-developed legs for walking on land.
18. Amphibians are ectothermic vertebrate animals that spend the early part of their life in water and the adult phase on land. Adults possess a three-chambered heart, and have the ability to breathe via lungs and through the skin.
19. Reptiles in the order Chelonia include: sea turtles, tortoises, and freshwater turtles. These organisms possess a shell that surrounds the body and four legs. Members of the order Squamata include snakes and lizards. Lizards are a very diverse group possessing four legs and a tail. Snakes do not possess legs.
20. Adult amphibians can breathe through lungs as well as through their moist skin.

Vocabulary (p. 20)

1. c - Anura
2. f - Reptilia
3. i - amniotic egg
4. l - Squamata
5. o - alligator
6. d - Urodela
7. h - dinosaurs
8. m - Crocodilia
9. b - metamorphosis
10. j - Rhynchocephalia
11. a - amphibian
12. k - Chelonia
13. g - ectothermic
14. n - tadpole
15. e - Apoda

Answer Key to Student Activities

Major Orders of Amphibians and Reptiles (p. 21-23)

- 1 a. Anura b. frogs and toads c. about 4,200
d. compact tailless body; hind limbs adapted for jumping e. jumping and swimming. f. catch insects with tongue or mouth g. bodies of water and wetlands h. lay eggs in water
- 2 a. Urodela b. salamanders and newts c. about 500
d. slender body, long tail, four legs for walking e. walking and swimming in water f. eat invertebrates g. moist areas h. lay eggs most commonly in water
- 3 a. Apoda b. Caecilians c. about 150 d. snake-like body; no limbs; tropical e. slither; burrow in soil f. strong jaws that consume insects and other invertebrates g. most live in tropical soils; some live in aquatic environments h. some species lay eggs that are guarded by a parent; other species bear live larva.
- 4 a. Squamata b. snakes and lizards c. over 6,800
d. scaly skin, four legs in lizards; no legs in snakes e. lizards walk and climb; snakes slither or swim f. most eat animals; strong jaws g. warm to moderate climates; terrestrial and aquatic h. lay amniotic eggs
- 5 a. Chelonia b. turtles, tortoises, and sea turtles
c. over 250 d. shell of bony plates to which vertebrae and ribs are fused e. walking or swimming f. herbivores or carnivores, strong jaws g. warm to moderate climates; moist and dry environments h. lay amniotic eggs
- 6 a. Crocodilia b. alligators, crocodiles, caimans, and gavials c. about 25 d. large, heavily scaled, powerful tails e. walking and swimming
f. carnivorous, powerful jaws and large teeth g. warm climates in and around water h. lay amniotic eggs
- 7 a. Rhynchocephalia b. tuataras c. two known species d. lizard-like; up to 90 cm in length; live to be 60 years old e. walking and climbing f. eat insects and other invertebrates g. small islands near New Zealand h. lay eggs every four years.

Amphibians vs. Reptiles (p. 24)

- 1 a. Large gelatinous masses consisting of hundreds to thousands of eggs are laid in water. Some species lay eggs out of water.
b. Amphibians commonly begin their life cycle as larva, referred to as tadpoles that dwell in water. They are not cared for by their parents.
c. Most young commonly develop without the care of parents. At some point larva undergo metamorphosis in which they lose their tails, legs develop, and they develop lungs.
- 2 a. Reptiles lay an amniotic egg that has a hard outer layer and numerous internal layers of tissue. A yolk commonly nourishes the embryo.
b. Reptilian young are relatively well developed at birth. They do not have a larval form, but more or less resemble adults.
c. Young are commonly, but not always, nurtured by adults for a period of time. They can feed themselves as juveniles.

Make Your Own Reptile or Amphibian (p. 25)

Before starting the activity it might be helpful to discuss the concept of adaptations. Describe some examples of adaptations possessed by animals. Continually encourage your students to focus on designing their animal with specific adaptations in mind.

Preliminary Assessment

Name: _____

Directions: Circle the best answer for each of the following:

- Salamanders, frogs, and toads are examples of:
 - reptiles
 - amphibians
 - tuataras
 - mammals
- Most amphibians spend the early part of their lives:
 - in the water
 - on land
 - underground
 - in air
- The following term refers to the series of physical changes young amphibians undergo as they become adults:
 - maturation
 - adolescence
 - parthenogenesis
 - metamorphosis
- While amphibian larva breathe through gills, adult amphibians have the capacity to carry out respiration through lungs as well as through their:
 - skin
 - bones
 - liver
 - digestive system
- About 370 million years ago, early amphibians most likely evolved from:
 - reptiles
 - invertebrates
 - lobe-finned fishes
 - dinosaurs
- The skin of toads compared to that of frogs is:
 - smoother
 - wetter
 - scaler
 - drier and bumpier
- Salamanders and newts belong to the following order:
 - Anura
 - Urodela
 - Apoda
 - Crustacea
- Reptiles have a watertight skin covered with:
 - scales
 - warts
 - brilliant markings
 - hair
- Reptiles do not maintain a constant internal body temperature and are referred to as being:
 - endothermic
 - homeothermic
 - ectothermic
 - warm-blooded
- Reptilian embryos develop inside the following structure:
 - amniotic egg
 - uterus
 - marsupial pouch
 - cell wall
- In order to survive on land, reptiles had to solve the problem of:
 - drying out
 - pumping blood
 - swimming underwater
 - flight
- The largest vertebrate animals to have ever walked on land were:
 - saber tooth tigers
 - wooly mammoths
 - elephants
 - dinosaurs
- The reptilian order Chelonia includes the following:
 - crocodiles
 - frogs
 - turtles and tortoises
 - tuataras
- The order Crocodilia includes large reptiles that live in or around:
 - deserts
 - forests
 - water
 - mountains
- Snakes and lizards are reptiles in the large order:
 - Squamata
 - Rhynchocephalia
 - Chelonia
 - Crocodylia

Post Assessment

Name: _____

Directions: Circle the best answer for each of the following:

- Snakes and lizards are reptiles in the large order:
 - Squamata
 - Rhynchocephalia
 - Chelonia
 - Crocodylia
- About 370 million years ago, early amphibians most likely evolved from:
 - reptiles
 - invertebrates
 - lobe-finned fishes
 - dinosaurs
- Reptiles have a watertight skin covered with:
 - scales
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- While amphibian larva breathe through gills, adult amphibians have the capacity to carry out respiration through lungs as well as through their:
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 - Crustacea
- The order Crocodylia includes large reptiles that live in or around:
 - deserts
 - forests
 - water
 - mountains
- The skin of toads compared to that of frogs is:
 - smoother
 - wetter
 - scaler
 - drier and bumpier
- Reptiles do not maintain a constant internal body temperature and are referred to as being:
 - endothermic
 - homeothermic
 - ectothermic
 - warm-blooded
- The largest vertebrate animals to have ever walked on land were:
 - saber tooth tigers
 - wooly mammoths
 - elephants
 - dinosaurs
- Salamanders, frogs, and toads are examples of:
 - reptiles
 - amphibians
 - tuataras
 - mammals

Video Review

Name: _____

Directions: Answer these questions as you watch the video:

1. **You Observe!**

Describe this frog larva.

2. **You Decide!**

What features did amphibians need to develop to adapt to life on land?

3. **You Decide!**

What purpose does this serve?

4. **You Observe!**

What is the main distinguishing feature of these animals?

Video Assessment

Directions: After you watch the video, fill in the blank to complete the sentence.

1. Amphibians spend the early part of their lives in _____.
2. _____ is the process of an animal changing form at a point in its life.
3. To adapt to life on land amphibians developed legs and _____ to breathe air.
4. _____ are amphibians with elongated bodies and tails.
5. The skin of reptiles is covered with _____.
6. Reptiles are _____, meaning they do not maintain a constant body temperature.
7. Reptilian embryos develop in _____ laid on land.
8. _____ were the largest reptiles to roam the Earth.
9. The order _____ includes turtles and tortoises.
10. The largest living reptiles are in the order _____.

Amphibians and Reptiles Vocabulary

Name: _____

Directions: Unscramble the vocabulary words in the first column. Match the words to the definitions in the second column.

____ 1) nraau _____

a. An ectothermic vertebrate animal that is well adapted to both life in water and on land.

____ 2) etlapiir _____

b. A series of changes young animals undergo at some point to become adults.

____ 3) icomanit geg _____

c. The amphibian order that includes frogs and toads.

____ 4) tmusaaq _____

d. An order of amphibians that includes salamanders and newts.

____ 5) llaaoirgt _____

e. The amphibian order that includes worm-like animals, many of which live in the ground.

____ 6) duleaor _____

f. The class of land-dwelling vertebrates that possess scales, lay amniotic eggs, and are ectothermic.

____ 7) aiudosnrs _____

g. A characteristic of amphibians and reptiles in which their core body temperature fluctuates according to environmental conditions.

____ 8) oadrilocci _____

h. The largest reptiles to have lived on Earth; are now extinct.

____ 9) tohiersaommps _____

i. Watertight, multi-layered structure within which the reptilian embryo develops.

____ 10) cpahayhnieclhor

j. A small order of reptiles that includes only two living species of tuataras.

____ 11) mhbaainip _____

k. Sea turtles, tortoises, and freshwater turtles are members of this order.

____ 12) oieahlcn _____

l. An order of reptiles that includes lizards and snakes.

____ 13) mhtcecreoit _____

m. The reptilian order that includes the largest living reptiles on Earth.

____ 14) dlaeotp _____

n. The larval form of frogs and toads; possess a tail and gills.

____ 15) oaadp _____

o. Large reptiles that have a relatively flat snout and long, powerful tail.

Major Orders of Amphibians and Reptiles

Name: _____



Background:

Amphibians and reptiles have inhabited the planet for hundreds of millions of years. These ectothermic organisms have been extremely successful vertebrates, inhabiting all but the coldest parts of the globe.

Amphibians preceded reptiles and are thought to have first appeared about 370 million years ago. They became common during the Carboniferous period 360 to 280 million years ago, but became scarce as reptiles dominated the land. Today's amphibians descended from just a couple of families that survived the Age of the Dinosaurs.

Presently there are over 4,800 species of amphibians. There are 37 different families in three orders: Anura, Urodela, and Apoda. The order Anura includes frogs and toads. Both have similar body shapes including four legs, with the hind limbs adapted for jumping. An important difference though, is their skin. Frogs have smooth moist skin, whereas toads have dry, bumpy skin. Toads can live in drier environments than frogs who need to have their skin constantly moist. Salamanders and newts belong to the order Urodela. These organisms have elongated bodies, four legs, and long tails. Most live in moist places. An organism that looks like a worm, but is actually an amphibian belongs to the order Apoda. These tropical soil dwelling animals lack legs but possess other amphibian features.

Reptiles first appeared in the fossil record about 300 million years ago. They particularly proliferated during the Mesozoic Era about 251 to 65 million years ago during the Age of the Dinosaurs. About 65 million years ago dinosaurs began to decline and eventually became extinct. The reptiles that survived evolved into the species that inhabit the planet today.

There are over 8,000 different species of reptiles found throughout the world excluding the coldest regions. In the class Reptilia, there are four living orders. The order Rhynchocephalia includes only two living species called tuataras. Tuataras are long, lizard-like animals that can exceed a half meter in length. They dwell on islands off the coast of New Zealand.

A group of reptiles with which you are probably more familiar are in the order Chelonia. This group includes sea turtles, tortoises, and freshwater turtles. In many species, the head can be drawn inside the shell, protecting it from predators. Legs emerging from under the shell are used for walking or swimming.

The large order Squamata includes lizards and snakes. Even though these animals are in the same order they appear quite different from each other. Most lizards are four-legged, while snakes don't have legs. Both types of reptiles are covered with scales. Most lizards and snakes are carnivorous, preying on insects and other small animals. Lizards are an extremely diverse group found in many different environments. Some common lizards include iguanas, geckos, chameleons, and anoles. The American chameleon, has the amazing ability to change color to blend in with its surroundings.

Snakes comprise over one-third of all reptiles. While most snakes are non-venomous, some, such as the rattlesnake, possess poisonous venom capable of paralyzing prey. Snakes are capable of swallowing food that is much larger than themselves due to the fact that their jaw enables the mouth to open very wide. They possess special sense organs including a forked tongue capable of sensing odor-bearing particles.

The order Crocodylia consists of 25 species of large, mainly aquatic reptiles including crocodiles and alligators, and lesser known gavials and caimans. Animals in the order Crocodylia are the largest living reptiles on Earth ranging in length from 2.5 to over 7 meters! Most possess long snouts, powerful jaws, large teeth, and long, powerful tails used for swimming. The majority of these reptiles feed on animals they capture with their massive jaws. Crocodiles, recognized by a pointed snout, can be vicious and will attack large animals including deer, cattle, and even humans. The American Alligator with its relatively flat snout is less aggressive, feeding primarily on fish.

Major Orders of Reptiles and Amphibians

Name: _____

Directions: Below are representations of several of the major orders of present-day amphibians and reptiles. Using textbooks, information in the preceding Background, and other reference books, complete the information for each order.

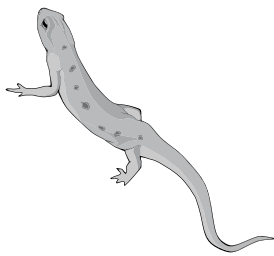
Amphibian Orders

1.



- a. Order:
- b. Examples:
- c. Number of Species:
- d. General Characteristics:
- e. Mode of Transport:
- f. Food Getting:
- g. Habitat:
- h. Reproduction:

2.



- a. Order:
- b. Examples:
- c. Number of Species:
- d. General Characteristics:
- e. Mode of Transport:
- f. Food Getting:
- g. Habitat:
- h. Reproduction:

3.



- a. Order:
- b. Examples:
- c. Number of Species:
- d. General Characteristics:
- e. Mode of Transport:
- f. Food Getting:
- g. Habitat:
- h. Reproduction:

Major Orders of Reptiles and Amphibians

Name: _____

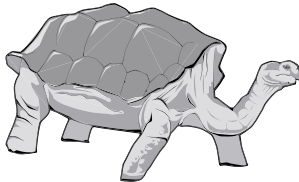
Reptilian Orders

4.



- a. Order:
- b. Examples:
- c. Number of Species:
- d. General Characteristics:
- e. Mode of Transport:
- f. Food Getting:
- g. Habitat:
- h. Reproduction:

5.



- a. Order:
- b. Examples:
- c. Number of Species:
- d. General Characteristics:
- e. Mode of Transport:
- f. Food Getting:
- g. Habitat:
- h. Reproduction:

6.



- a. Order:
- b. Examples:
- c. Number of Species:
- d. General Characteristics:
- e. Mode of Transport:
- f. Food Getting:
- g. Habitat:
- h. Reproduction:

7.



- a. Order:
- b. Examples:
- c. Number of Species:
- d. General Characteristics:
- e. Mode of Transport:
- f. Food Getting:
- g. Habitat:
- h. Reproduction:

Amphibians vs. Reptiles

Name: _____

Background:

Generally speaking, amphibians are small animals that live in or near water, and go largely unnoticed by many of us. While reptiles live widely on land, many also are small and live unnoticed. In fact, many people mistakenly confuse reptiles and amphibians from each other. In many cases they outwardly appear alike. In spite of these similarities, amphibians and reptiles are distinct classes of vertebrate animals that are different from each other. In this activity you will compare and contrast the characteristics of amphibians and reptiles.

Directions:

In this activity use your knowledge of amphibians and reptiles to compare and contrast the characteristics of each. Describe the characteristics in the spaces provided.

1.

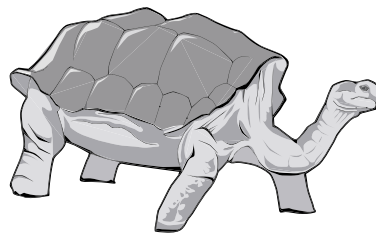


a. Description of egg:

b. Description of young:

c. Development of young:

2.



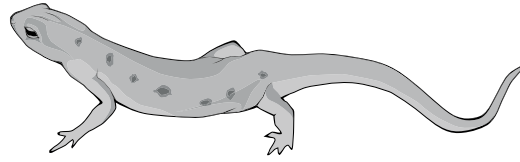
a. Description of egg:

b. Description of young:

c. Development of young:

Make Your Own Reptile or Amphibian

Name: _____



Background:

Both reptiles and amphibians possess many adaptations that enable them to successfully live their lives. For example, reptiles possess a watertight skin covered with scales that prevents their bodies from drying out on land. Amphibians possess skin that is not watertight but instead allows them to breathe through it. Hence, their skin must be continually moist, making it necessary for them to live near or in water. These are just a couple of examples of the many, many adaptations possessed by reptiles and amphibians. In this activity you will create your own reptile or amphibian highlighting, some of the adaptations of these amazing animals.

Materials:

fabrics, cellophane, tape, pins, markers, paper, any odds and ends that you find useful.

Directions:

1. In this activity you will work with a partner to create your own reptile or amphibian.
2. Decide if you are going to create a reptile or amphibian. Next, review the general characteristics of the group of animals you chose. Read about them in your textbook, watch the video, and study the characteristics and adaptations in other reference books.
3. The specific animal you create does not need to be a replica of an actual living example of a reptile or amphibian. It can be an imaginary example. Before you start to create your organism, answer the following questions in the space provided:
 - a. Where does the animal live?
 - b. What is the climate?
 - c. How does your animal adapt to the climate?
 - d. What does your animal eat? What adaptation does it possess for obtaining food?
 - e. What other organisms live in the area that your animal will have to compete with and/or protect itself from?
 - f. What are some of your animal's predators? How will it protect itself from predators?
 - g. What will you name your animal?
4. Make a sketch (actual size) of your animal.
5. Using the materials provided by your instructor, and other materials you can obtain, create an actual model of your reptile or amphibian.
6. When you have completed creating your animal, explain to the class your design rationale and adaptations the animal possesses to help it survive.