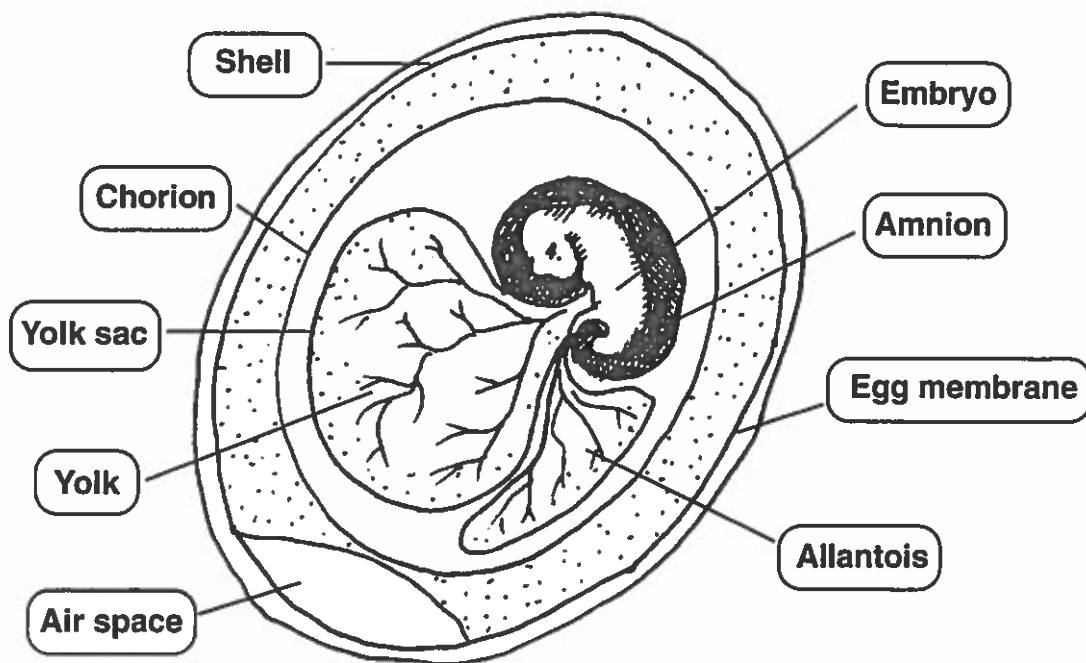


Reptile Reproduction: "Eggciting" Development

Reptiles mate to produce more reptiles. Most reptiles lay eggs on land in a nest. Some reptiles, such as the boa constrictor, keep the eggs inside their bodies, and when the babies hatch, they are born alive. Another constrictor, the anaconda, often gives birth to many snakes at one time. Scientists have seen a 6 m (19 ft.) female anaconda give birth to 72 babies.

Reptile eggs may have hard shells like those of chicken eggs or softer, leathery shells. This is a wonderful adaptation for an animal that reproduces on land. Unlike the eggs of most fish and amphibians, eggs of reptiles are fertilized inside the body of the female. After fertilization, the female's body secretes a shell around the egg. The mother then lays the egg in a nest made of plant material or mud. This protects the developing **embryo** (a developing organism) until it is fully-developed and ready to hatch. This type of egg, called an **amniotic egg**, has everything the embryo needs to finish developing. It contains four special kinds of membranes: the **amnion**, **yolk sac**, **allantois**, and **chorion**. The egg is named for the **amnion** (AM nee un), which surrounds the fluid in which the embryo floats, offering it protection. The **yolk sac** is a membrane that surrounds the yolk, which is the food supply for the embryo. The **allantois** (uh LAN toe is) stores waste produced by the embryo. The **chorion** (KOR ee un) lines the outer shell, enclosing the embryo, all the other membranes, and everything inside the shell. As you can see, this is a benefit for being able to reproduce on land.

The young developing reptile gets oxygen from small **pores** (holes) in the shell. Carbon dioxide is released in the same way. Predators eat many reptile eggs before they can hatch. Mammals, other reptiles, and raptors prey on reptile eggs. The baby reptiles break open the eggs using an **egg tooth**. The egg tooth dries up and falls off shortly after hatching. The young reptile is called a **hatchling**. Most reptiles do not look after their young. The hatchlings are able to care for themselves immediately.



Name: _____ Date: _____

Reptile Reproduction: *Reinforcement Activity***To the student observer:** What are the advantages of the amniotic egg? _____

I. Answer the following questions.

1. What is the function of the shelled egg? _____

2. What is an amniotic egg? _____

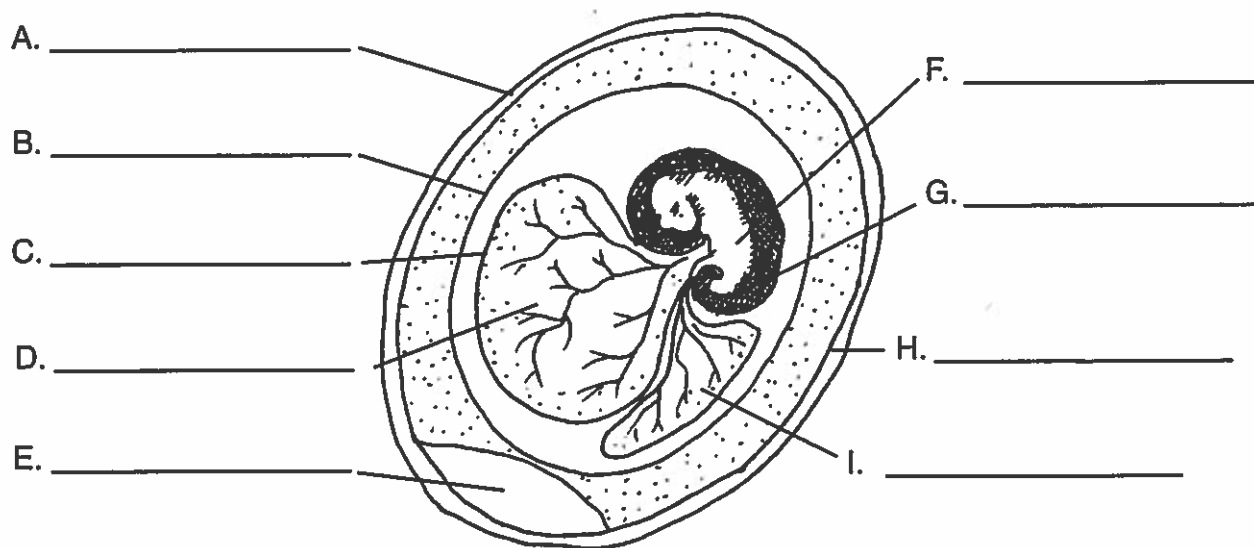
3. What is the purpose of the yolk? _____

4. What surrounds the floating embryo? _____

5. How does oxygen enter the egg? _____

6. What are young reptiles called? _____

II. Identify the parts of the reptile egg below.



Reptile Behavior: *Reptiles Do the Strangest Things*

In order to survive, all living things must be able to react well to their surroundings. If they are unable to react well in their surroundings, the picture of survival becomes very bleak. Reptiles have many wonderful adaptations that help them survive in the habitat in which they live. They use their wonderful senses to help them know how to react. For instance, did you know a chameleon is a lizard that can look backward with one eye and forward with the other? They can move each eye independently, and they have a wide field of vision. They use this ability to see all the way around themselves as they move toward their prey. One eye focuses on the prey, while the other keeps watch. Then once they are close enough, the other eye focuses on the prey, and this gives the lizard the ability to shoot its tongue out at lightning speed and grab its victim with deadly accuracy. Vision is just one of the senses animals use to get information about what is going on in the environment. Any change in the environment that is detected by a sense organ is called a **stimulus**. A stimulus is the "something in the environment" that causes the animal to make a **response** or change. The stimulus is the cause of the behavior. Heat, pressure, chemicals, sounds, light, and even gravity are examples of stimuli. Reptiles rely on sight, hearing, smell, and touch just like many other animals do to detect stimuli.

Behavior

Behavior is the way an organism acts. Most behaviors are focused on the need to survive. Behaviors help reptiles avoid predators and find food, water, shelter, and mates. Behaviors can be **inborn** (innate) or **acquired** (learned). Innate behavior is behavior the animal is born knowing how to do. Learned behavior is behavior that is acquired over time as a result of experience. Innate behaviors are reflex acts or instincts. **Reflex acts** are automatic responses in which the brain is not involved. **Instinctive behaviors** require thought processes and are a bit more complex. **Learned behaviors** include conditioning, trial and error, reasoning (insight), and imprinting. Reptiles demonstrate mostly innate forms of behavior. One innate behavior of some reptiles is to molt (shed their skin) in order to grow. Reptiles use sounds, visual displays, and scents as behavior to convey information.

Staying Alive—Defensive Behaviors

Running and Hiding

Most reptiles prefer a quiet day of searching for food, basking in the sun, and avoiding danger. When they are threatened, most reptiles will use the number one method of defense—running and hiding. Even venomous snakes prefer to get out of sight. Many lizards are as fast as lightning and dash away as soon as they sense danger. Some are so quick they can skim across the top of water or sand without sinking. Others glide away by jumping from tree to tree. They extend flaps of skin on their sides that support them in the air. They may fly or glide in the air for up to 9 m (30 ft). Now that's a defensive behavior that is bound to come in handy!

Reptile Behavior: *Reptiles Do the Strangest Things* (cont.)

Tail Adaptations

Many reptiles use their tails as weapons or to fool the enemy. Some lizards have strong, stout tails that are covered with spines. When frightened, they scoot for their burrow and dive in headfirst, with their tail sticking out. If an enemy gets too close—smack with the tail spines! A small rubber boa has a round, blunt tail that resembles a boa's head. The small boa uses its tail to fool enemies by coiling up into a ball with its head at the bottom of the coil. As its tail curls out of the top, enemies unfortunately mistake it for the head and grab the wrong end. Some reptiles can drop their tail if the need arises. A lizard's tail is made up of several bones called **vertebrae**. These vertebrae have cracks where they can break off. When a lizard drops its tail, the tail continues to wiggle and gives the lizard an opportunity to escape. Don't worry, it can grow a new one by a process called **regeneration**.

Camouflage

Natural **camouflage**, or blending in with the surroundings, helps an animal to ambush prey or hide from enemies. Reptiles have developed different methods of camouflaging themselves. The European viper is the same color as sand. It flattens itself into the sand, making it difficult to see. The alligator snapping turtle looks like a stone if it lies motionless in water. It sits patiently waiting for prey to get close enough and then snatches it into its powerful jaws. Lizards are famous for their camouflage talents. They can alter their colors or patterns in a matter of seconds. Once their color matches their surroundings, it is very difficult for another animal to see them.

Bluffing

Bluffing the enemy is another behavior some reptiles use to avoid danger. They do this by acting bigger or more dangerous than they really are. They often scare their enemies away by pretending to be something they are not. A rat snake can act like a dangerous rattlesnake by hissing and vibrating its tail. In dead leaves, the tail can make a sound that is similar to the rattle of a rattlesnake. The frilled lizard is only eight inches long. This lizard raises a colorful, frilled collar of skin around its neck, hisses loudly, puffs up its body with air, rises up on its clawed hind legs and waves its tail back and forth when it is frightened. This sudden ferocious movement that makes the lizard appear bigger and very dangerous is very effective at startling an enemy. Some snakes like to play dead to bluff the enemy; others have coloration similar to poisonous snakes and can fool the enemy into thinking they are something else. The horned lizard can squirt blood at enemies over seven feet away to catch the predator off-guard.

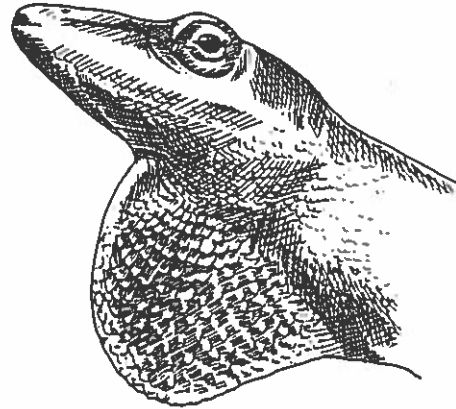


Reptile Behavior: *Reptiles Do the Strangest Things (cont.)*

Meeting a Mate—Courtship Behavior

Like all animals, reptiles must create new members of their species, or they would eventually die out. The process by which a species creates members of its own kind is called **reproduction**. Reptiles require both a male and a female in order to mate. They mate only at certain times of the year. Some reptiles, like the green turtle, only mate every two or three years. Male lizards become very colorful when it's time to mate. Their coloration is how they attract a female. They also attract mates by making certain sounds. A male alligator roars to meet and attract a female. The male anole lizard can fan out the skin of its throat.

During mating season, its fan is brightly colored and warns the other male lizards to stay away. The display also tells the female it is ready to mate. Rattlesnakes will compete for a mate with a special "dance." The two will twist and turn with their heads reared as they push and press against each other. It looks like a fight, but neither snake gets hurt.



Reptiles do not depend on water for reproduction as fish and amphibians do. They reproduce by internal fertilization. The eggs are fertilized inside the female's body. A developing young reptile, called an **embryo**, then grows within the egg. After mating, many reptiles lay their eggs in sand, soil, or on rotting logs. Some bury their eggs in nests deep in the ground, while others lay their eggs in depressions in the ground. The eggs are usually laid where they will keep warm, to ensure proper development. After they lay their eggs, most reptiles leave them. The young hatch and receive no parental care. An exception is the American alligator. A female alligator provides care for its eggs and young. It covers the eggs and guards the nest from predators. After the eggs hatch, the mother carries the hatchlings in her mouth to water. The young follow their mother several weeks before going off on their own. Another amazing reproductive behavior is that of the sea turtles. These turtles make an incredible journey. The turtles **migrate** (make a seasonal movement) for thousands of kilometers to lay their eggs on the same beaches where they were hatched.

Maintaining the Delicate Balance—Seasonal Behaviors

A reptile's body temperature depends on its surroundings. It needs heat from the sun to keep its body working properly. When the temperature gets too high, it cools down in the shade. Reptiles that sense the climate is getting too cool perform a behavior called **hibernation**. During hibernation, reptiles hide and rest for long periods of time without eating or moving. They live off the fat stored in their bodies until warm weather returns. Reptiles that live in areas that get too warm hide during the hot summer months. Summer hibernation is called **estivation**.

Reptile Behavior: *Reptiles Do the Strangest Things (cont.)*

Reptile Senses

Reptile Vision

Sight is the sense that is most commonly used among reptiles. Most reptiles have very keen eyesight, except for the snake. Burrowing animals seem to lose some of their sense of sight. Snakes are very nearsighted and don't see details. They do sense movement, though, and a snake will often go past motionless prey. The eye of a reptile works much like a camera. Light enters the eye through a lens. The **iris** (colored portion) controls the amount of light that enters the eye. Behind the eyeball is a coating called the **retina**. The retina is the eye's "film." When light falls on the retina, it registers an image. The optic nerve sends the image to the brain, where it is "developed" into a "picture." Most reptiles have two eyelids and can blink. This keeps the eyes clean. A membrane covers the eye and offers protection. Alligators use this membrane when they dive to see clearly underwater. Snakes do not have eyelids; they have a clear scale that covers the eye for protection. Most vertebrates have vision cells called rods and cones, which were named for their shapes. **Rods** are light-sensitive so an animal that is **nocturnal** (active at night) has many rods and lacks cones. **Cones** are the cells responsible for color vision. Most nocturnal animals lack color vision. Many reptiles, such as lizards and turtles, have large numbers of cones and do have color vision.

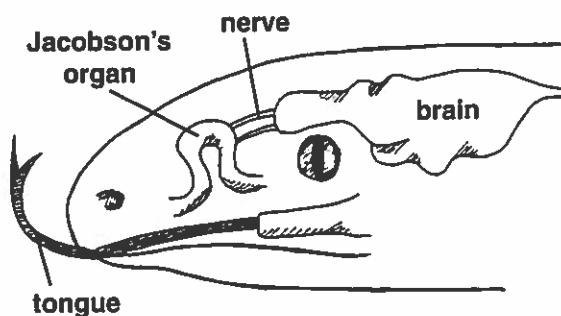
Reptile Hearing

Most reptiles have an ear opening where sound enters and travels inside their head to the inner ear. Reptiles do not have a visible outer ear. Many have an eardrum that is visible on the outside of the head. Sounds come from vibrations that travel in the form of energy waves through matter, such as water or air. An eardrum picks up the wave vibrations and sends the message along the auditory nerves to the brain where it is interpreted as sound.

Snakes do not have an ear opening, but they can detect noises. Sound travels on the ground to the snake's lower jaw. The vibrations are picked up by the jaw and pass through its skull into the inner ear. Some snakes do not rely on sound at all, but are so sensitive to temperature changes that they can feel heat coming from the body of a warm-blooded animal. They have special organs called "pits" between their eyes and nostrils. The pits detect the rise or drop in body temperature.

Reptile Smell and Taste

Many reptiles have a **Jacobson's organ** on the roof of their mouth. It is used for taste and smell. Snakes and lizards use it to find food. They flick their tongues quickly in and out of their mouths; the tongue catches scent particles from the air. By touching their tongues on the Jacobson's organ, they can detect prey or enemies. Some reptiles smell much the same way we do. The molecules in the air enter the nose, and the information travels to the brain where it is registered as smell.

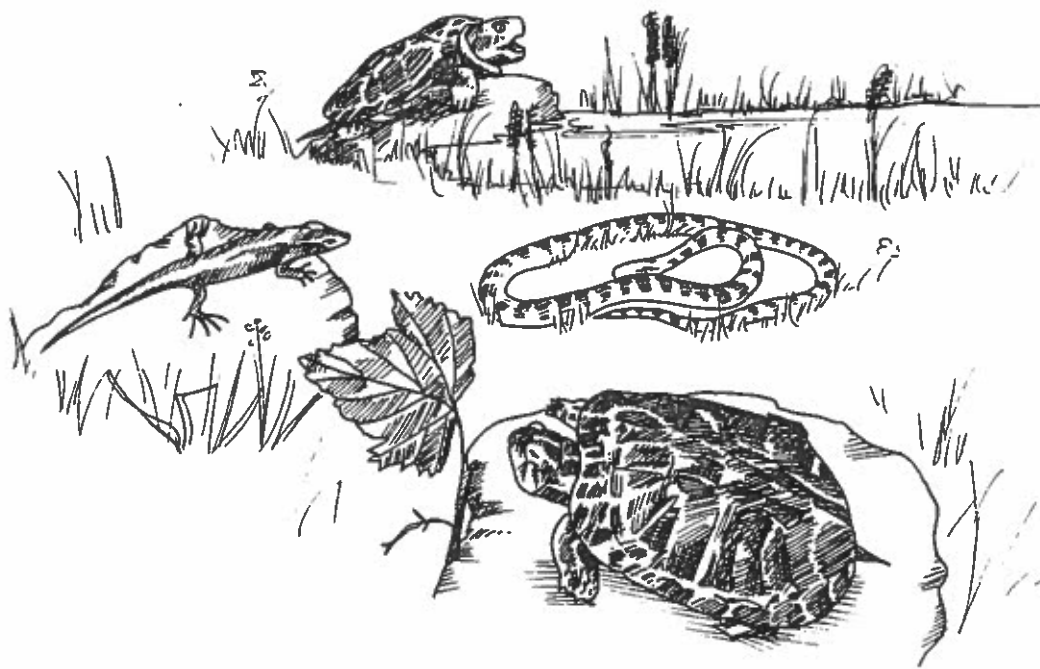


Reptile Behavior: *Reptiles Do the Strangest Things (cont.)*

How Reptiles Function

Reptiles take most of their body heat from their surroundings. Reptiles live in warm places; they depend on the heat from the sun to warm their bodies. A reptile's body needs to be warm so that its organs can work properly. They like it not too hot and not too cold. When their bodies get too warm, they estivate or move to cooler areas. When it gets too cold, they hibernate or bury themselves where the winter frost will not reach them. They live off the fat stored in their bodies until the weather warms again.

Reptiles have many ways of catching and eating food. They feed on a wide variety of things. Many reptiles are **carnivores**. Carnivores are animals that eat meat. They use their senses to track down prey, or sometimes they let their prey come to them. They hide quietly until an animal wanders by, and then they catch it. Most *chelonians* (reptiles in shells) and some lizards are **omnivores**. They eat both plants and meat. Snakes either constrict their prey by suffocating them or kill their prey with poison. Reptiles digest their food very slowly. They can go for long periods of time without needing to eat.



Name: _____ Date: _____

Reptile Behavior: *Reinforcement Activity*

To the student observer: Do you ever behave like these reptiles? _____

Analyze: Can you explain and give an example of a time you demonstrated a defensive, courtship, or metabolic (internal conditions) behavior?

Directions: Answer the following questions.

1. What are adaptations? _____

2. What is behavior? _____

3. What are the two forms of behavior? _____

4. Reptiles demonstrate mostly which form of behavior? _____

5. What are four methods that reptiles use for defense?

a. _____

b. _____

c. _____

d. _____

6. Give two examples of courtship behaviors used by reptiles.

a. _____

b. _____

7. What is an embryo? _____

8. What are two behaviors that reptiles use to maintain proper body temperature?

a. _____

b. _____