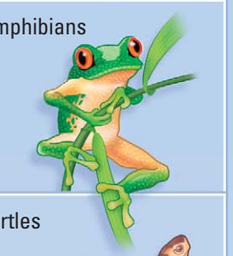
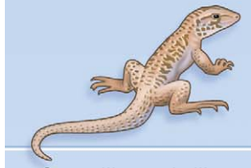
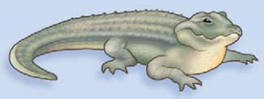
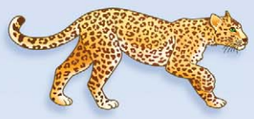
Figure 26-24 Vertebrate Body Systems

Vertebrate Group	Skeleton/Movement	Nervous System	Reproduction	Digestion	Circulation	Water Balance and Waste Disposal	Gas Exchange
Fishes 	Skeleton includes a skull and a backbone composed of a series of segmented units called vertebrae. The skull forms a case for the brain, and the vertebrae enclose the nerve cord. Most vertebrates have a hinged jaw. Most vertebrates have paired limbs (legs, wings, or fins). Muscles attached by tendons to the bones move the jointed skeleton, enabling the animal to walk, fly, and/or swim.	The brain and spinal cord make up the central nervous system. Nerves transmitting impulses to and from the central nervous system make up the peripheral nervous system.	Sexual reproduction; mostly external fertilization. Embryo develops within non-waterproof egg in an aquatic environment. Usually thousands of offspring are produced. Parental care is not common.	Complete digestive tract; organs include mouth, pharynx, esophagus, stomach, intestines, liver, pancreas, and anus.	Two-chambered heart with a single circuit of blood flow. Blood is pumped from heart ventricle to gill capillaries where the blood is oxygenated.	Kidneys maintain water balance and excrete nitrogen wastes. In freshwater fishes nitrogen wastes are excreted as ammonia; in marine fishes, as urea. Gills also aid in excretion and salt/water balance.	Gills; one group (lungfishes) also has lungs.
Amphibians 					Three-chambered heart, with two circuits of blood flow. Some mixing of oxygen-rich and oxygen-poor blood in the ventricle, but a ridge in ventricle maintains some separation.	Kidneys maintain water balance and excrete nitrogen-containing wastes. Adult amphibians and turtles excrete waste in the form of urea.	Gills as larva (some groups have external gills). Lungs and moist skin in most adults. In most amphibians the skin is important for gas exchange.
Turtles 			Sexual reproduction; internal fertilization. Generally eggs develop externally and are protected within a leathery, waterproof shell. Some snakes retain eggs internally. There is little parental care.		Three-chambered heart with two circuits of blood flow. The ventricle is partially divided and less mixing of oxygen-rich and oxygen-depleted blood occurs than in amphibians.		Lungs and the cloacal lining (back end of the digestive tract).
Snakes and lizards 							Lungs
Crocodiles and alligators 			Sexual reproduction; internal fertilization. Eggs develop externally and are protected with a hard, waterproof shell. Parental care exists in most species.	Complete digestive tract; organs include mouth, pharynx, esophagus, stomach, intestines, liver, pancreas, and anus; plus birds have crop for storage and gizzard for grinding food.	Four-chambered heart with two circuits of blood flow. A small opening between the ventricles allows some mixing of oxygen-rich and oxygen-depleted blood.	Kidneys maintain water balance and excrete nitrogen-containing wastes. Most reptiles and birds excrete waste in the form of uric acid.	
Birds 					Four-chambered heart with two completely separated circuits of blood flow—one to the lungs and one to the rest of the body.		Lungs and air sacs
Mammals 			Sexual reproduction; internal fertilization. With the exception of the egg-laying mammals, embryos develop internally. Mammal young are nourished with milk from mammary glands of female.	Complete digestive tract; organs include mouth, pharynx, esophagus, stomach, intestines, liver, pancreas, and anus.		Kidneys maintain water balance and excrete nitrogen-containing wastes in the form of urea.	Lungs