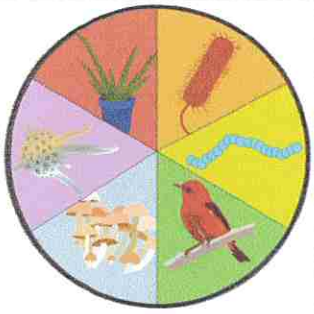
Non-Fiction Reading Comprehension Name: _____ Date: _____

WHAT IS AN ANIMAL?



All living things are **classified** into one of the six kingdoms: animals, plants, fungi, protists, eubacteria ("true" bacteria), and archaebacteria (ancient bacteria). Animals are multicellular beings with a nervous system that ingest plants and other organisms to survive. This separates animals from all of the other types of living things.

Animals can be found all over from far below the surface of the Earth to soaring far above in the skies. The deepest animal ever found is a type of roundworm, called a "devil worm." This animal was found 2.2 miles below the surface of the Earth. It was thought that only single cell organisms, like bacteria, could live that far down in the Earth's crust, but the devil worm proved them wrong.

Animals are divided into two main categories, **vertebrates** and **invertebrates**. Vertebrates have a backbone, while invertebrates do not. Bears, penguins, and snakes are all examples of vertebrates, while jellyfish, worms, and crabs are all examples of invertebrates. These are further broken down into different groups based on animal characteristics.

Animals come in many shapes, sizes, and colors and are all over the planet. From the microscopic rotifer or "wheel animal" that lives mostly in freshwater to the enormous blue whale, reaching up to 98 feet in length, the animal kingdom is filled with fascinating creatures. No matter how small or large they are, they play an important role in their ecosystems.

Answer the questions about the passage above.

1. You've probably heard the word "kingdom" before, but what does it mean in this passage? (Think: What word could you replace "kingdoms" with to keep it's meaning?)

   _____

   _____

2. Circle the word that could replace the word **classified** above and still keep its meaning:

   taken sorted pushed collected

3. Looking at the underlined areas in the passage, what do you think "multicellular" means if it is different from "single cell organism?" _____

   _____

4. – 7. What are the two main categories of animals? How are they different? Explain.

   _____

   _____

8. Is a snake a vertebrate or an invertebrate? _____

9. The prefix "eco–" means environment or habitat. Which word do you see that uses this prefix? What do you think it means? _____

   _____

VERTEBRATES

Animals that have a backbone are called vertebrates. All vertebrates also have an internal skeleton to give their body structure and support. Vertebrates are further divided into five main groups: mammals, birds, fish, amphibians, and reptiles. Some of these animals are **warm-blooded**, meaning they maintain their body temperature. Other animals are **cold-blooded**, meaning they cannot maintain body temperature and it will change depending on their environment.

Let's take a look at the warm-blooded groups of vertebrates first! Mammals are warm-blooded, have hair or fur on their bodies, and breathe with lungs. Most mammals bear live young, while a small group do lay eggs (like the platypus). All mammals care for their young and produce milk. Birds are also warm-blooded and breathe with lungs, but have bodies covered in feathers. All birds lay eggs and the ones that fly have hollow bones, while non-flying birds, like penguins, do not.

Reptiles are a group of cold-blooded vertebrates that breathe with lungs. Their bodies are covered in dry scaly skin. Some reptiles give live birth, while others lay eggs on land. Amphibians are also cold-blooded, but many begin life hatching out of eggs that are laid in water and breathe with gills. However, as they grow, their bodies change and develop lungs and legs for life on land. Some amphibians can even breathe through their skin! Our last group of cold-blooded vertebrates are fish. Fish breathe with gills and are covered in scales. Most fish lay eggs in water, but some do give live birth.

Although all of these groups are vertebrates, they look and live very differently from each other. From the smallest vertebrate, a tiny frog (smaller than a US dime) that lives in Papua New Guinea, to the largest mammal (largest animal), the blue whale, vertebrates are a **diverse** group!

Answer the questions about the passage above.

1. What is the difference between warm-blooded and cold-blooded? _____

_____

_____

2. What do you think the word **diverse** means? Use context clues to circle the meaning that makes the most sense:

things that are different from each other *things that are very similar to each other*

3. - 16. Check each box in the row that shows a characteristic of that group. For body covering, write what covers the body animals in that group. (check **all** that apply)

	warm-blooded	cold-blooded	has lungs	has gills	body covering
amphibians					
birds					
fish					
mammals					
reptiles					

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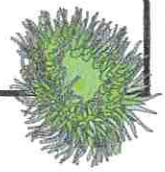
iNVERTEBRATES

If someone were to ask you to list ten animals, what would you say? Most people would name a lot of vertebrates like tigers, sharks, giraffes, or penguins, but there are far more invertebrates on Earth. In fact, invertebrates make up 97% of all animals! Invertebrates include animals such as jellyfish, crabs, bees, butterflies, worms, sea stars, coral, sea sponges, and many more.

Invertebrates are cold-blooded, meaning their body temperature cannot be maintained, but changes with their surroundings. Invertebrates do not have an internal skeleton like vertebrates do. In fact, the word *invertebrate* means without backbone. Some invertebrates have an **exoskeleton** for protection on the outside of their body. Animals such as arachnids (spiders), shellfish, **crustaceans** (crabs, shrimp) and insects all have exoskeletons to protect themselves.

There are eight main groups of invertebrates: echinoderms (sea stars, urchins), coelenterates (jellyfish, anemones, polyps), porifera (sponges), mollusks (squid, snails, clams), arthropods (insects, spiders, crustaceans), annelids (segmented worms like earthworms), nematodes (round or cylindrical shaped worms), and platelminti (flatworms like tapeworms). Each group has their own set of characteristics, but can also be very diverse.

Although they aren't always the first animals that come to mind, invertebrates definitely outnumber us vertebrates. While only about 66,000 vertebrate species have been found and described so far, we're at about 1,300,000 and counting with invertebrates! Next time you go outside, stop and look around you. How many invertebrates can you find?



Answer the questions about the passage above.

1. What are two characteristics that ALL invertebrates have? _____

_____

2. What does the "exo-" part of exoskeleton mean? _____

_____

3. - 6. Which invertebrate group are each of these a part of?

jellyfish _____ insects _____

snails _____ earthworms _____

7. Why do you think the author included the number of vertebrate species and invertebrate species that are known currently? What does this comparison show us?

_____

_____

8. Do all invertebrates have an exoskeleton? Use evidence from the article to support your answer. _____

_____

_____

9. What does the word **invertebrate** mean? _____

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ANIMAL CLASSIFICATIONS

Use the articles "Vertebrates" and "Invertebrates" to help you answer the questions below.

1. If **invertebrate** means "without backbone," then what does **vertebrate** mean?

_____

2. What do amphibians, reptiles, fish, and all invertebrates have in common?

_____

3. Worms and snakes have a similar body shape, but what is the main difference between the two that you read about? _____

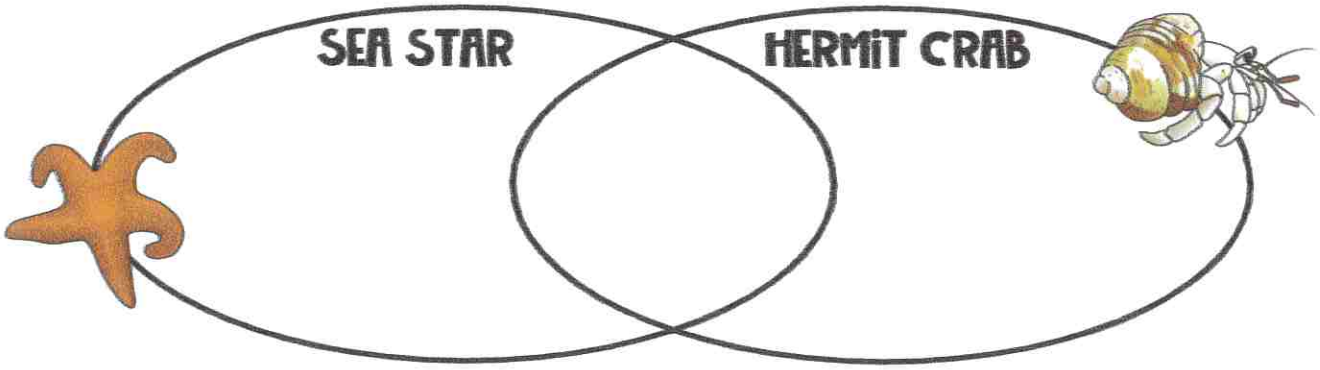
_____

4. If **endo**skeleton is the opposite of **exo**skeleton, what do you think "endo" means? Explain using evidence from the text. _____

_____

_____

5. – 7. **Compare** and **contrast** these two animals. Write at least two things in each area of the Venn diagram using your article on invertebrates. Remember, where the ovals overlap is what they have in common. Use the text and your background knowledge. Be sure to think about their classifications as animals!



8. If you read that an animal is warm-blooded, would it be a vertebrate or invertebrate? How do you know? Use the text to support your answer.

_____

_____

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ANIMAL ADAPTATIONS

Animals have special traits and abilities that help them survive in their environment, we call these **adaptations**. These adaptations can help the animal move, get food, protect themselves, and more! Some adaptations are part of the animal's body, while others are behaviors or actions they perform to survive. There are adaptations that animals are born with, and some that are gained over time.

Adaptations are influenced by the environment that the animal lives in. They have adapted, or changed over time to thrive in the **biomes** that they are found in. For example, marine mammals like whales and seals have a layer of blubber, or fat, that helps keep heat in and keeps them buoyant (able to float). These changes (in adaptations) do not happen quickly though, and if an animal is put into a biome that it isn't suited for, they will not survive. For example, a shark is a type of fish and has gills to breathe underwater, if it were to be put on land, it would not be able to breathe.

Some adaptations like **camouflage**, which is the color or pattern found on an animal, can be used for more than one purpose. The animal can hide and ambush prey that comes too close if it hunts for its food, or escape from a predator by blending in with its surroundings. Being able to capture food or hide from a predator is necessary for an animal's survival.

Even we have adaptations to help us survive. For example, you might notice your fingers appear to wrinkle up when you've been in water for a long time. This is an adaptation that scientists believe helps us be able to get a grip on things, even when we are wet. Adaptations are necessary for living in an ever changing world!

Answer the questions about the passage above.

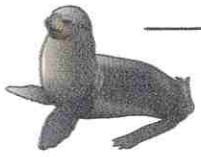
1. What does the word **adaptation** mean? _____

2. What is blubber? Why is it useful for certain animals? _____

3. Would blubber be useful for a lizard that lives in the desert? Explain. _____

4. What is camouflage? What are two ways it can be used? _____

5. If you took a seal that lives in the arctic and dropped it in the desert, what would happen? Would it survive? Explain your answer. _____



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STRUCTURAL VS. BEHAVIORAL ADAPTATIONS

Animal adaptations are either **structural** or **behavioral**. Structural adaptations are adaptations that are a part of the animal's body in some way. These adaptations can be part of the internal structure of the animal, or on the outside of the animal's body. Behavioral adaptations are behaviors, or actions that an animal does to survive.

Structural adaptations are physical, meaning they are part of the animal. This can be the **camouflage** of a green tree frog's green skin as it sits on a green leaf and blends in, the frog's long back legs it uses to quickly jump away from predators, or its sticky toes that allow it to easily climb trees. Some structural adaptations are inside the body, like the electroreceptive organs in a shark that allow it to sense the electrical fields of prey or the sweat glands on mammals that help them keep their body temperature regulated.

Behavioral adaptations are behaviors, or actions, that animals do to help them survive. For example when certain animals hibernate for the winter, that is an action they take to help them survive the cold winter months. Bats are **nocturnal**, or active during the night hours when it is dark, because they mostly use hearing and echolocation to find prey, so they don't need sunlight. Some animals migrate from one area of the globe to another during certain parts of the year to follow food, stay comfortable, or find a place to have their young.

From the hundreds of legs on a millipede to help it swiftly move across the forest floor, to the hibernation of a bear in winter, these adaptations all help animals survive.

Answer the questions about the passage above.

1. What is the main difference between structural and behavioral adaptations? _____

_____

_____

2. – 5. Give two examples of structural adaptations and two examples of behavioral adaptations. _____

_____

_____

_____

6. What does the word **nocturnal** mean? _____

_____

7. What word in the text means moving from one area of the globe to another at different times during the year? _____

8. Think about what you know about the winter season. Give **two reasons** some animals need to hibernate during this season. (Remember, think about animals' needs!)

_____

_____

_____

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INHERITED VS. LEARNED ADAPTATIONS

Adaptations can also be classified into two other groups besides structural and behavioral, we can classify them as **inherited** or **learned**. As you may have guessed, inherited adaptations are adaptations that animals are born with, while learned adaptations are picked up or learned as the animal grows.

Inherited adaptations can be behavioral or structural. For example, if you touch something really hot, you quickly pull your hand away without thinking about it. This is a reflex you were born with to protect you from getting badly burned. Animals have **instincts** or behaviors we are born with that are triggered by certain senses. An example of an instinct would be the instinct a monarch butterfly has to fly to Mexico in the fall. Once the daylight hours become shorter and the temperatures begin to fall, they begin their journey to overwinter there.

Structural adaptations like a hooked beak on a hawk for tearing meat or webbed feet on a duck to help it swim are adaptations the animal is born with since these are on or in the body. However, learned adaptations are something you are not born with and are mostly behaviors that are learned over time. For example, many songbirds learn their songs from their parents. Young wolves learn to hunt in packs from watching and participating with other wolves. Young animals that try to eat insects that have toxins (like monarchs), soon learn not to eat them because of the bitter taste.

No matter whether an adaptation is inherited or learned, they are all important to help animals survive in their environment.

Answer the questions about the passage above.

1. If an adaptation is structural, it must be an _____ adaptation.

2. - 5. Give two examples of inherited adaptations and two examples of learned adaptations from the article. _____

_____

_____

_____

6. What is an **instinct**? _____

_____

7. What triggers a monarch butterfly to fly to Mexico in the fall? How does it know it's time?

_____

_____

8. Think about when an object comes near your eyes. Why do they shut quickly? Do you have to think about it? Would this behavior be something you learned or inherited?

_____

_____

_____