

Science Task

To explore the classification of animals and recognise the main groups of invertebrates.



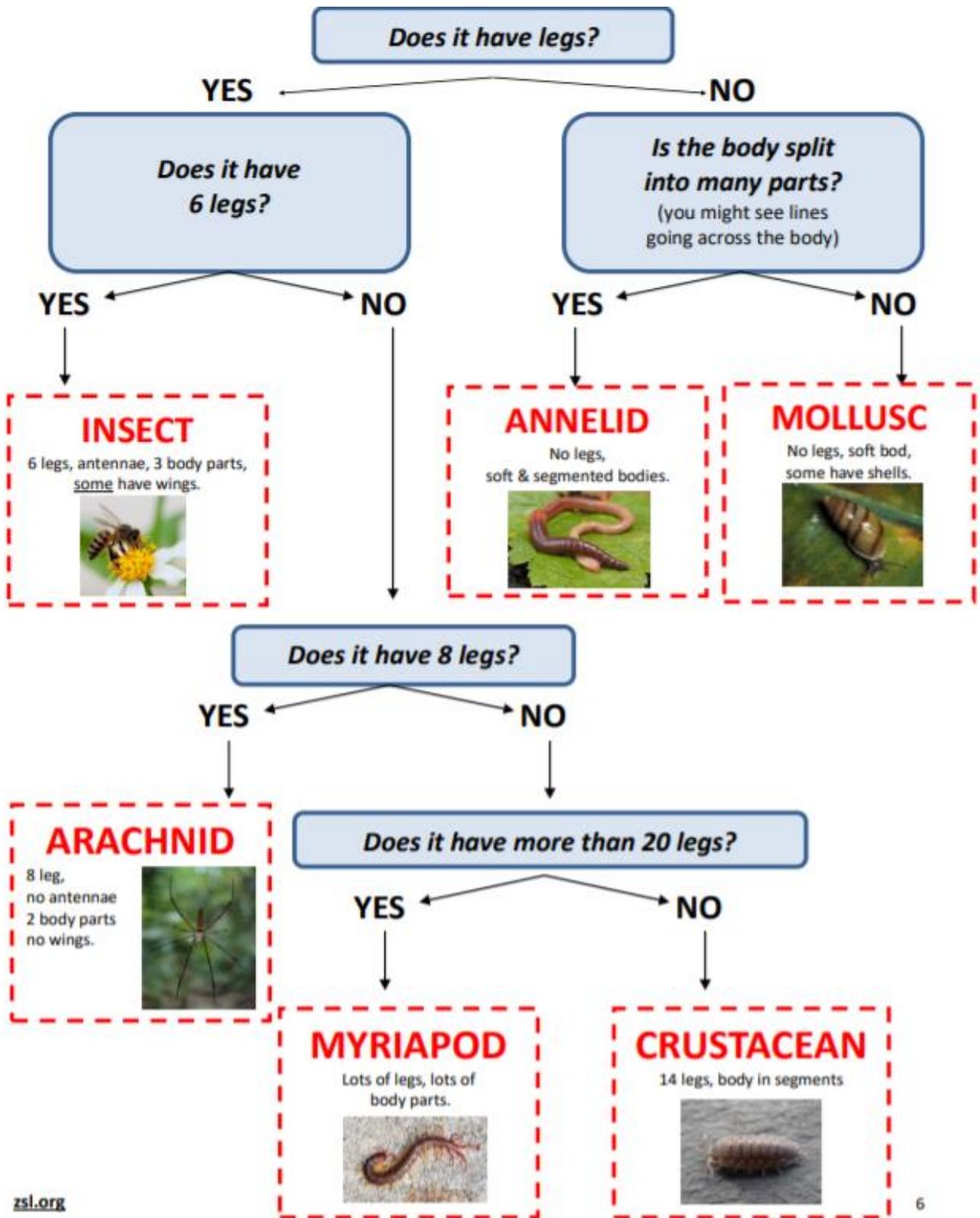
Invertebrates are animals that don't have a backbone. Some have soft bodies, like worms, slugs and jellyfish. Other invertebrates, like insects, spiders and crustaceans, have a hard outer casing called an exoskeleton. This protects their body a bit like a suit of armour.

Your task is to create a classification chart to identify the following invertebrates:

			
Centipede	Leech	False Widow Spider	Horse Fly
			
Red Admiral Butterfly	Emperor Scorpion	Earthworm	Clam
			
Octopus	Millipede	Snail	Harvestman

Use the classification chart on the next page as a starting point to classify the different types of invertebrates (insects, annelids, molluscs, arachnids, myriapods and crustaceans) and then consider what other questions you could use to then classify the specific invertebrates above. Use the information on the next few pages to help you guide your questions.

Extension: Can you add additional invertebrates to your classification chart?



Additional questions you could use (remember, they should be answered with yes or no):

- Does it have an exoskeleton?
- Is its body divided into three sections?
- Does it live in salt water?
- Does it have jointed legs?
- Does it have one pair of antennae?

Worms (annelids)

The animals in the Annelida are segmented worms. They have **no legs**, and **no hard skeleton**. Unlike molluscs, annelid **bodies are divided into many little segments**, like rings joined together. There are many other kinds of worms, but only annelids are segmented this way. There are three main groups of annelids: the earthworms (and their relatives), the leeches, and a big group that lives in the ocean and are called polychaetes.



Molluscs

Molluscs are a large group of invertebrate animals. Molluscs have **soft bodies**, and their bodies are not divided into rings like the segmented worms called annelids. Molluscs **don't have legs**, though some have flexible tentacles for sensing their environment or grabbing things. **Most mollusc species grow a hard shell for protection**, but their shell grows in only one or two pieces. It doesn't have joints like the exoskeletons of insects and crustaceans.



There are three main groups of molluscs. Snails are the most diverse group, there are tens of thousands of species. Nearly all snails grow a spiral shell that is all one piece. A few snail groups have stopped growing shells; they're called slugs. The next largest group is Bivalvia, the clams, oysters, and mussels. These are molluscs with two shells that they can close up tight for protection. Finally there is Cephalopoda, the squids and octopuses. They only live in salt water. They have no shells, but are larger, smarter, and faster than their relatives in the other groups. Squids and octopuses are all predators; they eat fish, crustaceans, and other molluscs.

Insects

The Insects are the most diverse and important group of animals on land. There are more species of insects than all other land animals put together.

Insects are members of a larger group called arthropods (which also includes arachnids, myriapods, and crustaceans). All arthropods have a **rigid exoskeleton**, and legs that are jointed (arthropod means "jointed foot"). In order to grow, arthropods have to shed their whole exoskeleton all at once; this is called "molting." All insects have **bodies which are divided into three sections**: the head, thorax, and abdomen. In some insects these sections are fused together so they may be hard to tell apart, and some baby insects (called immature) do not have all three sections until they become adults. Nearly all insects have a pair of **antennae** on their heads. They use their antennae to touch and smell the world around them. Adult insects (and most immatures) have six legs that are attached to the middle section of the body, the thorax. Insects are the only arthropods that have **wings**, and the wings are always attached to the thorax, like the legs.



Arachnids

Arachnids are spiders, harvestmen, mites and ticks, and their relatives like scorpions. All arachnids have **eight legs**, and unlike insects, they **don't have antennae**. The **bodies of arachnids are divided into two sections**, the cephalothorax in front and the abdomen behind. Sometimes small arachnids like mites and harvestmen have the two sections fused close together so you can't see the separation. **No arachnids have wings**, although some spiders can float on the wind using long strands of silk. Many arachnids use silk, either to catch prey or to help them reproduce. Arachnids lay eggs, and have simple development where babies look like small adults and just get bigger as they grow. Some arachnids, especially the mites, change a lot in different stages of their lives. Arachnids are part of a larger group called **arthropods**, which also includes insects, myriapods, and crustaceans. All arthropods have an **exoskeleton** and **legs that are jointed** (arthropod means "jointed foot"). In order to grow, arthropods must shed their whole exoskeleton all at once; this is called "molting."



Crustaceans

Crustaceans are arthropods, related to insects and myriapods. They are the most diverse animal group in underwater habitats. Only a few crustacean groups have evolved the ability to live on land, and like amphibians, these terrestrial crustaceans still need water or damp places to live. Like all arthropods, crustaceans have a **hard exoskeleton**, and **jointed legs**. Unlike other arthropods, crustaceans have **2 pair of antennae**. Sometimes one pair is very small and hard to see.



Myriapods

The Myriapods are centipedes and millipedes, and some small relatives. Centipedes and millipedes look similar to each other; they both look a little like worms with lots of legs. Actually they are arthropods, they have a **tough exoskeleton** and **jointed legs**, and they are related to insects and crustaceans. Like insects, myriapods have **one pair of antennae**, but they have many more legs than insects do. Myriapods have **more than 20 legs**, and all the other arthropods have fewer legs than that (most have only 6 or 8 legs).

Millipedes usually have round bodies, and have two pairs of legs on each body segment. They move slowly and often tunnel into soil and dead leaves. Nearly all millipede species are decomposers: they eat dead leaves, fungi, and detritus. If another animal threatens them, they may curl up, and some give off smelly toxic chemicals to protect themselves.



Centipedes are usually flattened, and only have one pair of legs per segment. Centipedes are quick predators, eating any small animals they can catch. They have a venomous bite, but no Michigan species are dangerous to people.