

Awesome Ants

A Reading A-Z Level T Leveled Book
Word Count: 1,217

Connections

Writing and Art

Write an acrostic poem with words or phrases about ants, using the letters in the words *awesome ants*. Illustrate your poem and share it with your class.

Science

Research one species of ant, such as carpenter ants or leaf-cutter ants. Write a paragraph about what makes the species unique. Include a diagram of your ant.

Reading A-Z

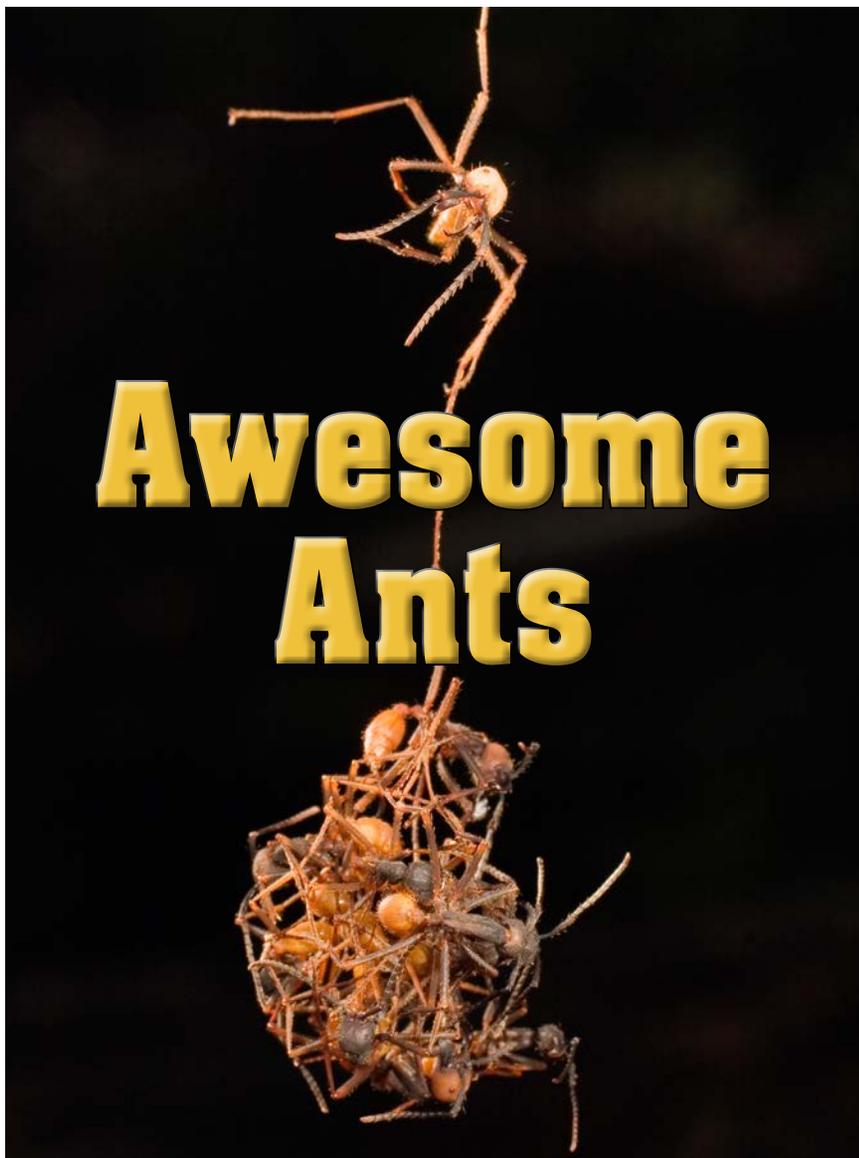
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Awesome Ants



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Focus Question

What makes ants awesome?

Words to Know

antennae	mandibles
colony	scavenge
communicate	sensors
cultivate	species
insects	

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Correlation

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Ants are always on the move.

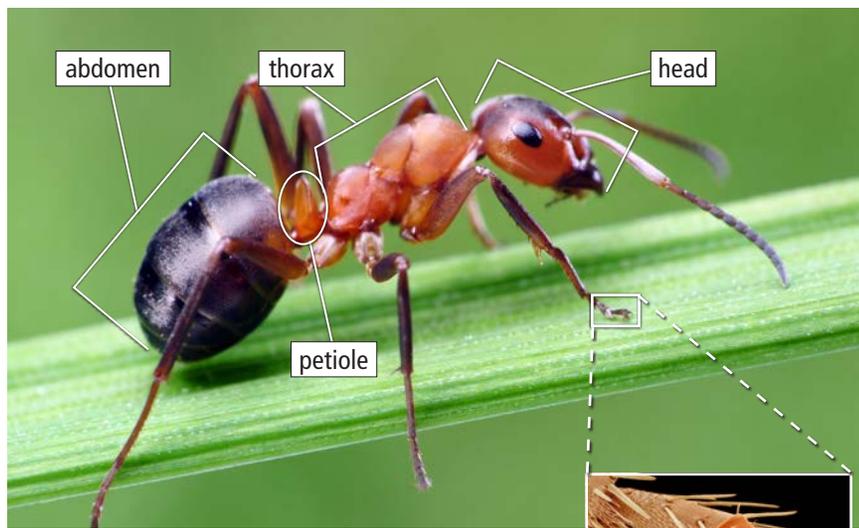
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A Little History

They march through grass, across sidewalks, over the kitchen counter, and onto picnic blankets as uninvited guests. They come in many colors, such as red, yellow, brown, or black, and can be as small as 1 millimeter (0.04 in.) long. These magnificent creatures are ants—awesome ants.

Ants crawled around under the dinosaurs, early mammals, and ancient birds more than 100 million years ago—in the Cretaceous (kreh-TAY-shus) period! They used to look more like wasps. They had shorter jaws, stingers that they could extend from their bodies, and middle and hind legs that were better for climbing. Today, more than 10,000 **species** of ants live in deserts, rainforests, swamps, and cities on every continent except Antarctica. They have been able to survive for so long by adapting to changes in their environments.



An ant's leg seen through a microscope shows the hooks it uses to climb.

Body Parts

Like all **insects**, ants have three main body parts—an abdomen, a thorax, and a head—and three pairs of legs. Some tropical species can grow to approximately 38 mm (1.5 in.) long, but most average 5 mm (0.19 in.) to 15 mm (0.59 in.) long. The rear part of their body is the abdomen, also called the *gaster*, which contains the heart and stomachs. The heart is a long tube that pumps translucent blood through the ant's body without using blood vessels. Ants have two stomachs: one for food for the ant itself and another for food to be shared with the **colony**.

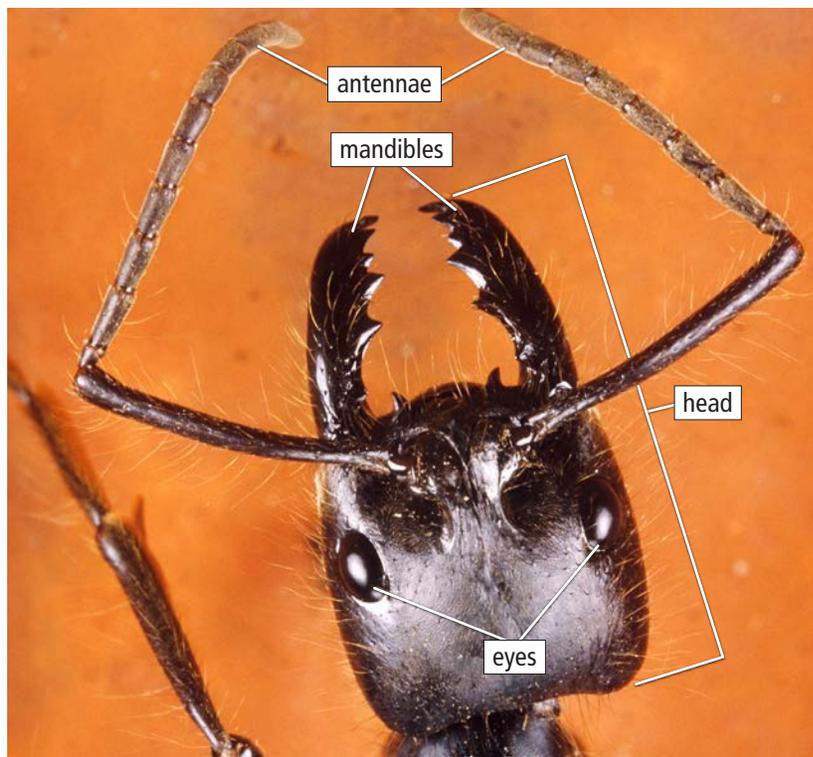
The middle part of the body, called the *thorax*, is a base for all the ant's muscles. The three pairs of legs are designed for running quickly, and each leg has three joints and little hooks that allow ants to climb



Ants carry large items in their mandibles.

almost anything. Ants don't have ears, but they have the ability to detect sound by feeling vibrations through their legs.

The head contains the brain, eyes, **antennae**, and **mandibles**. The mandibles, which open and close like scissors, project in front of the mouth. An ant's most important tool, mandibles are used for cutting and carrying things as well as for digging and hunting. Some ants can close their mandibles so quickly that they make a clicking sound. Ants can't chew and swallow food; instead they swallow the liquid that they squeeze from their food.



Ants' diets vary according to their species. Some prefer sugary liquids, while others **cultivate** fungus. Still others prefer to **scavenge** for whatever they can find. Ants are very strong and can lift more than twenty times their own weight.

All ants can bite, and some have stingers and venom sacs that they use to protect themselves from predators. Many ants that don't have stingers can spray toxic chemicals onto their enemies.



Ants use their antennae to taste a grape.

The two eyes, called *compound eyes*, consist of hundreds of lenses that combine many images into a single picture in an ant's brain. Some ants have three small **sensors**, called *ocelli* (oh-SELL-eye), on the tops of their heads to detect light and dark. Ants use their antennae to taste, smell, hear, and **communicate** with other ants through touch. They also use their antennae to recognize their friends in the colony and to detect enemies. The long, thin antennae bend in the middle, like a human's elbow, and are constantly moving.

Ants don't have lungs; instead, they breathe through small holes, called *spiracles* (SPEER-ah-culz), all over their bodies. Oxygen and carbon dioxide enter and exit an ant's body through the spiracles. Ants' bodies have a hard, waterproof covering, called an *exoskeleton*, which gives them support and protection from the elements as well as predators.



Four ants use their antennae to communicate.

Let's Talk

Ants communicate with each other in three ways: touch, sound, and smell. Ants touch each other's heads and antennae to send different messages. They can also make noises by rubbing their legs together or on their bodies. By recording these noises and comparing them across many ant species, scientists have learned that these complex signals are a call for help.

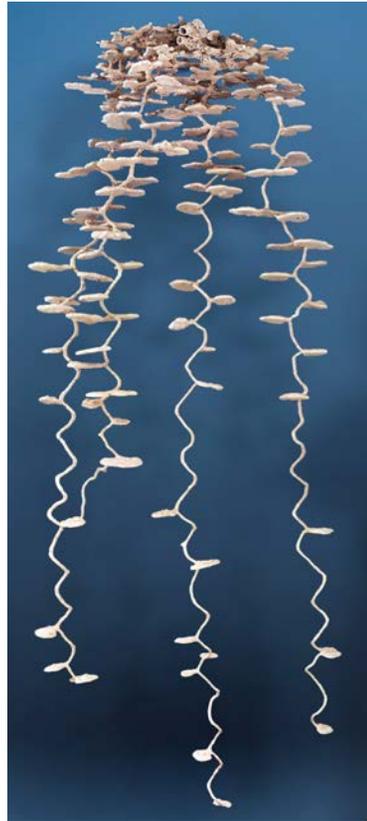


Leaf-cutter ants carry leaves that weigh far more than the ants back to their colony.

Ants communicate mainly by smell. They release special scented chemicals, called *pheromones* (FAIR-oh-mohnz), which linger long after the first ant is gone. Different scents send different messages. For example, some pheromones work as an alarm to warn other ants that danger is nearby. An ant that has discovered food emits a scent trail for other ants to follow. The trail allows them to find the food and return to the colony without getting lost. The more ants that follow the trail, the stronger it becomes. When an ant can't find food, the chemical warning decays so that other ants do not go that direction.

One Big, Happy Family

Ant colonies, which can have millions of members, are filled with activity. Some ants are active year-round, while others hibernate in the winter. Some ants build their colonies in logs or trees, but most build their colonies underground. Little mounds of dirt or sand are the telltale signs of an ant colony's location. Some ants reinforce the entrance to their colony by mixing twigs into the dirt for added protection from flooding. Colonies have many different chambers, which all have different uses. Some chambers store food, while others are nurseries for the eggs. Colonies even have spaces for groups of ants to relax in and a special chamber for the queen.



This cast shows the upper part of a large ant colony. Scientists think this colony went over 12 meters (39 ft) into the ground.



Soldier ants are usually much larger than worker ants.

Ants are social insects that work together as a group, and every ant has a function and special skills to perform it. Worker ants and soldier ants find food and protect the nest. These are usually the ants you see above the ground, and the older ants in the colony. Other



What About the Boys?

Male ants have only one purpose in most colonies: to mate with the queen. Once they've done their duty, most male ants simply die.

ants build and expand the nest, care for the young, and do other jobs, including taking care of the queen. The ants that work inside the nest tend to be younger ants. All these ants are female, but only one can lay eggs: the queen. In other words, all the ants in a colony are related.

The Queen

The queen is the leader of the colony, but she doesn't control all the activity in it. The largest of all the ants in the colony, the queen is an egg-laying machine. Some queens can lay thousands of eggs every day, which translates to millions of ants in a queen's lifetime. She needs so many offspring because most worker ants live only for an average of forty-five to sixty days.

Most colonies have one queen. When other queen ants hatch, they fly out in search of a new location to start another colony. After they start laying eggs, they lose their wings. Queens can also live longer than most other insects—more than twenty-five years—but when they die, so does the colony.

I Can Fly!

Like queens, some males can also fly. When they land near a colony, worker ants rip the wings off. Then they rush the male to the queen so the two can mate before the male dies.



Fire ants link their legs and use their bodies as building blocks to make structures.

Yep, Ants Are Awesome

Ants may be small, but they can do awesome things. Thousands or millions of ants working together can build bridges to cross a gap in their path. They can also shape themselves into rafts to float across rivers without drowning. Through teamwork, ants can overpower animals hundreds of times their own size for food.



A trail usually means the ants are moving to a new home—or they've found something very tasty.

While some types of ants can be trouble for humans, most ants are beneficial and support the environment in many ways. They spread seeds, protect crops by eating flies, caterpillars, and other pests, and improve the soil for plants by digging.

Stop and watch a trail of ants, or better yet, follow them—just don't step on their trail. Ants' abilities are inspiring, and learning about them highlights how awesome they are.

Glossary

- antennae** (*n.*) the thin feelers found on the heads of some animals that help them touch and smell (p. 6)
- colony** (*n.*) a group of animals that live together; a place where a group of ants or certain other social insects live (p. 5)
- communicate** (*v.*) to share information using pictures, language, or other means (p. 8)
- cultivate** (*v.*) to grow or raise something, usually a crop (p. 7)
- insects** (*n.*) small animals with six legs, three body parts, and usually two sets of wings (p. 5)
- mandibles** (*n.*) body parts near an insect's mouth that are used for grabbing, cutting, or crushing food or enemies (p. 6)
- scavenge** (*v.*) to find and eat scraps of garbage or animals that are already dead (p. 7)
- sensors** (*n.*) bodily structures that sense and react to a signal or change in conditions (p. 8)
- species** (*n.*) groups of living things that are physically similar and can reproduce (p. 4)