



## Activity Booklet



[bugs.uconn.edu](http://bugs.uconn.edu)

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HEALTH AND NATURAL RESOURCES

EXTENSION

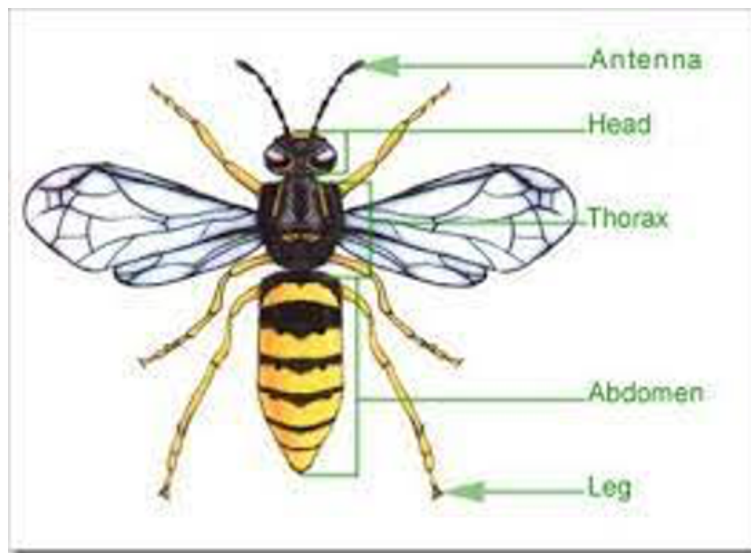
# What is an insect?

An insect is an arthropod and an invertebrate (animal without a backbone).

An insect's body is divided into three main parts – the head, the thorax, and the abdomen. (See diagram below).

An insect has no internal skeleton. It has an exoskeleton which is an external shell that protects the internal organs.

Insects have three pairs of legs and they have one pair of antennae on their heads.



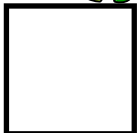
## Insects are very successful and very important

There are between six and ten million different types of insects. They are the largest group of animals on earth and come in many different shapes, colors, and sizes. These amazingly diverse animals have conquered all the environments on earth except for the frozen polar areas at the highest altitudes and in the immediate vicinity of active volcanoes.

Insects play a very important role in the web of life. Some of their jobs include pollinating flowering plants and vegetables; being a source of food for other animals and assisting in the decomposition (breakdown) of plants and animals. By learning more about these amazing creatures, we can protect all of the good they do.

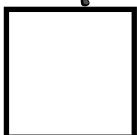
# Bug Scavenger Hunt !

**Find the Following In Your Environment.**



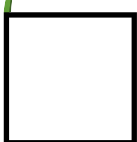
## Grasshopper

(Grasshoppers eat plants and other types of vegetation. A large grasshopper can jump 10 to 20 times its body length. Use your magnifying glass to look at its strong legs).



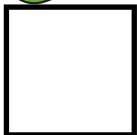
## Ladybug

(Ladybugs are a type of beetle. Some have no spots while other can have up to 20 spots. The color of a ladybug tells animals that it's not good to eat. What color ladybug did you find? How many spots does it have?)



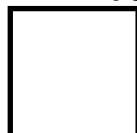
## Leaf

(Leaves have a green pigment called chlorophyll which helps them capture the energy of the sun and make food for the plant. Many insects eat leaves.)



## Worm

(A worm like an insect is an invertebrate (doesn't have a backbone). When earthworms tunnel through the ground they bring air into the soil. This allows plant roots to grow more easily.)



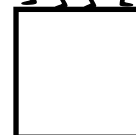
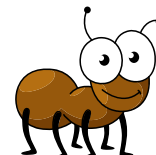
## Caterpillar

(A caterpillar is a young butterfly or moth. Caterpillars are an important food for birds.)



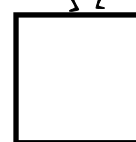
## Acorn

(Acorns are produced by an oak tree. An oak tree is very important for nature with 38 bird, 1178 invertebrate and 31 mammal species associated with it.



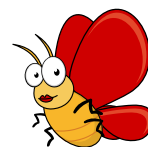
## Ant

(An ant can lift 20 times its own bodyweight. Take your magnifying glass and identify the ant's 3 body parts - head, thorax and abdomen.)



## Beetle

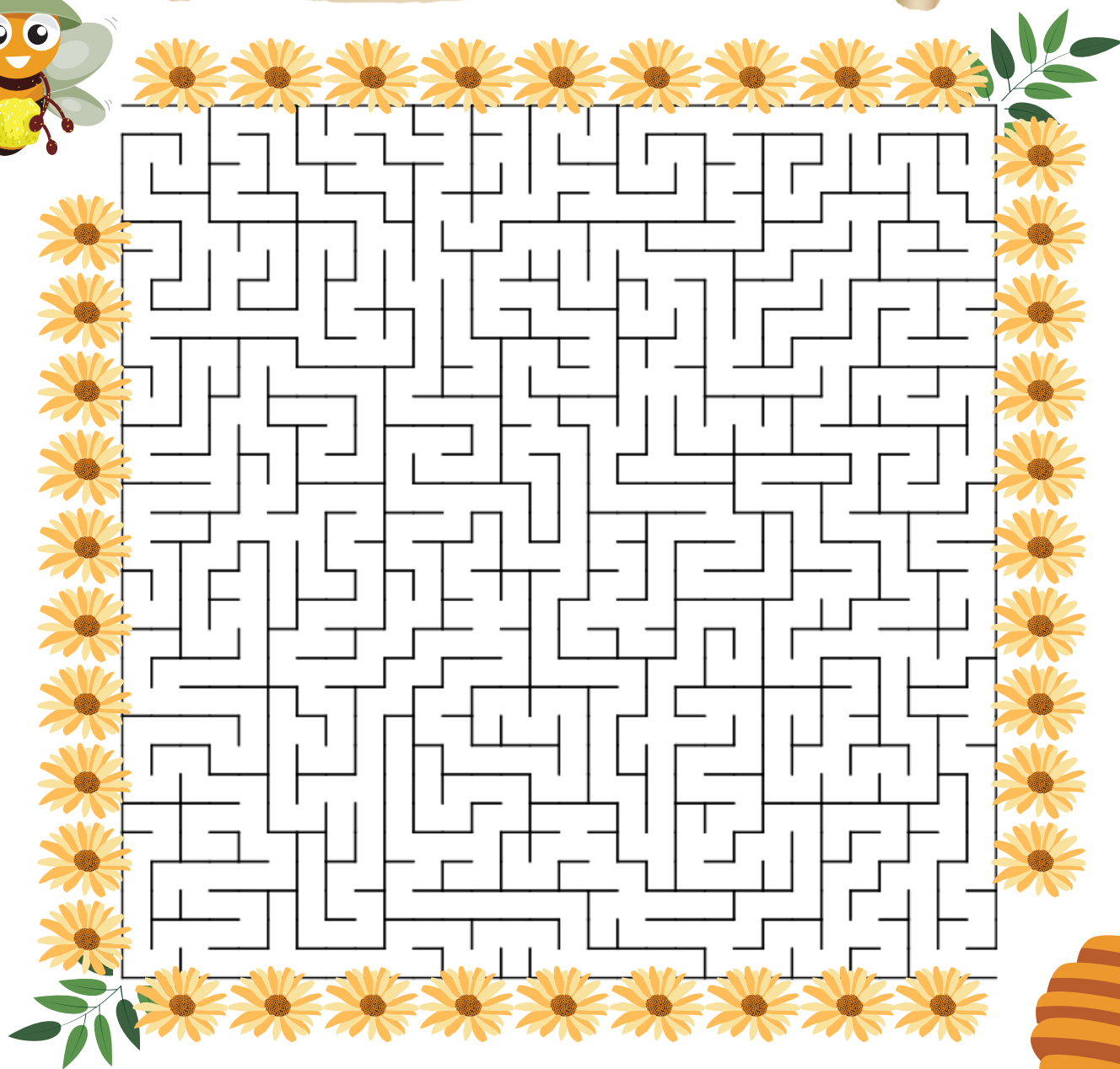
(Beetles can hurt and help the environment. Some destroy crops while other eat dead trees and help pollinate flowers.)



## Butterfly

(Butterflies have 4 wings. The colors on their wings are from thousands of tiny scales. Use your magnifying glass to look at the scales. The lifecycle of a butterfly is in 4 stages – egg, caterpillar, pupa and adult.)

# Help the Bee Find Her Way Home!





# Bug Week Bonanza II

F	E	R	C	B	L	M	V	O	L	G	J	C	B	C	D	C	M
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O	S	D	R	A	G	O	N	F	L	Y	X	N	N	E	D	Z	J

Find the following words in the puzzle.  
Words are hidden → ↓ and ↘.

ANT  
APHID  
BEE  
BEETLE  
BUTTERFLY  
CATERPILLAR  
CICADA

COCKROACH  
CRICKET  
DRAGONFLY  
FIREFLY  
GRASSHOPPER  
LACEWING  
LADYBUG

LEAFHOPPER  
MANTID  
MOSQUITO  
MOTH  
TERMITE  
WASP



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# Beneficial Insects

Insects are essential for the health of our ecosystems, and we must help them.

Here are 10 things you can do to help:

1. Create insect-friendly habitats and grow native plants (check out [bugs.uconn.edu](https://bugs.uconn.edu) for a list of pollinator-friendly native plants)
2. Reduce pesticide and herbicide use
3. Limit exterior lighting use
4. Reduce soap run-off from washing vehicles and buildings
5. Increase awareness and appreciation of insects
6. Save the stems
7. Leave the leaves
8. Provide a safe water source
9. Leave a small pile of twigs, stems, and leaves in the back corner of your garden.
10. "Plant" a log from your yard or a neighbor's yard

The main habitat features used by pollinators and other insects for shelter include stems and branches of trees, shrubs, and wildflowers; leaf litter; bare ground; dead wood; and brush piles. Keeping as many of these features as possible in your landscape (rather than taking them away) will help attract and support a variety of bees and other beneficial insects.

## Lacewings

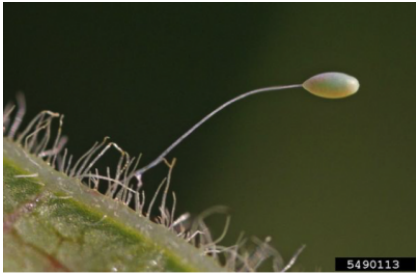


Lacewing adult. Source: Frank Peairs (Bugwood)

Lacewings are beneficial insects that love to eat aphids, thrips, beetles, small caterpillars, and soft scales. They play an important role in pest control in small backyard gardens and farms. Lacewing adults are 0.5 to 1 inch long, have delicate clear wings with many veins, and hold their wings over their body when at rest. Most lacewing adults feed only on pollen, nectar, and honeydew. There are many different types of lacewings, separated into two larger groups of green and brown lacewings.

# Beneficial Insects

One of the most fascinating facts about green lacewings is that females lay their eggs on ½-inch stalks, either individually or in groups. The stalks may help protect one newly-hatched larva from being eaten by another and also reduce the risk that the eggs or developing larvae may be parasitized. Lacewing larvae are brown and are sometimes described as resembling tiny alligators. Another name for a green lacewing larva is an ant lion.



Lacewing egg on a stalk.

Source: David Cappaert (Bugwood).



Green lacewing larvae.

Source: Bradley Higbee (Bugwood)

## Ladybugs (Ladybird Beetles)



Ladybug larva (on left) and adult ladybug (on right)

There are approximately 5,000 different species of ladybugs in the world. The most common one in Connecticut is the seven-spotted ladybug. It has a shiny red and black body with three spots on each side and one in the middle. It is 0.3 to 0.4 inches long. Ladybugs eat aphids and other plant-eating pests. One ladybug can eat up to 5,000 insects during its life.

Ladybugs lay their eggs in rows on the underside of a leaf, typically where aphids can be found. Their larvae hatch in a few days. Seven-spotted ladybug larvae are long, black, and spiky-looking with orange or yellow spots. Some people think they look like tiny alligators. The life cycle of a ladybug takes 4 to 8 weeks.

Ladybugs are most active from spring until fall. When the weather turns cold, they look for a warm, safe place to hibernate, such as in rotting logs, under rocks or inside houses.

# Beneficial Insects

## Honey Bees



From National Geographic

Honey bees were introduced into the U.S. from Europe in the 1600's. They play a very important role in pollinating flowers, fruits, and vegetables. Honey bees live in hives and there are three types of bees in the hive.

The queen, who runs the entire hive and lays eggs to create the next generation of bees. The workers, who find food (pollen and nectar from flowers) as well as build and protect the hive. Workers are all females and are usually the only bees we see flying outside the hive. In a single year, one honey bee colony can gather about 40 pounds of pollen and 265 pounds of nectar. The workers produce honey as food for the hive, but they typically produce 2-3 times more than they need.

That's why there's honey available for people to enjoy!

The drones are the male bees who mate with the queen. However, when cold weather sets in the drones are kicked out of the hive.

## Dung Beetles



UConn Photo/Sean Flynn

Dung beetles live everywhere in the world except for the very cold regions of the Arctic and Antarctica. They have dark, round bodies, six legs, and wings folded under hard, protective covers. Some male dung beetles have small horns on their heads. Dung beetles are good citizens and clean up what animals leave behind. That's right – they eat dung or poop!

# Beneficial Insects

There are three main groups of dung beetles - rollers, tunnellers, and dwellers. They are named for the way they use the poop they find. Rollers shape poop into balls and roll them away from the pile. They then bury the ball to either munch on later or to use as a place to lay their eggs. Tunnellers crawl into the poop and dig a tunnel beneath it. Dwellers live inside the poop.

Why would an insect want to eat poop? When an animal (such as a cow) eats tasty hay or grain, parts of the hay or grain pass through without being digested and end up in the animal's poop. It's these nutritious bits of undigested food that dung beetles like to eat and in the process, they clean the environment.

## Spiders



Although spiders are icky and often thought of as dangerous, they greatly help prevent bad bug breakouts in the garden, especially among veggie plantings.

## Dragonflies & Damselflies



These flying jewels like many insects, especially mosquitoes.



# Beneficial Insects

## Parasitoid Wasps

Parasitoid wasps. They are large to microscopically small wasps that lay their eggs inside other insects. After the eggs are laid, their larvae begin to eat the host insect from the inside. They are completely harmless to people. Some parasitoid wasps are the size of yellow jackets, while most are much smaller; the microscopic Trichogrammatidae are the smallest. Trichogrammatids are so tiny that they lay their eggs inside other insect eggs, where their larvae feed and develop. Other parasitoid wasps lay their eggs in caterpillars, aphids, and grubs.

A common sight for most homeowners is the parasitic wasp seen on the tomato/tobacco hornworm. When you see cotton-like "pills" on the outside of a hornworm, it is the result of a parasitoid wasp. What has happened is that a wasp has implanted its eggs into the hornworm. The eggs then develop into larvae, which feed on the inside of the hornworm. When the larvae are ready to pupate, they move to the surface of the insect and form the cottony cocoons that you see.

## Tiphia Wasps



Summer *Tiphia* wasps feeding on a wild carrot

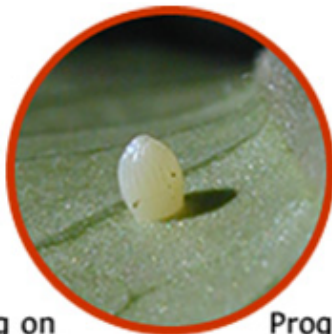


Adult Summer *Tiphia* Wasp

We typically do not think of wasps as being beneficial, but *Tiphia* wasps are natural enemies of Japanese beetle grubs. The spring *Tiphia* wasps are active in May and early June. They attack the grubs that have overwintered in our lawns. The summer *Tiphia* wasps, active from August into September, attack grubs by digging into the soil to search for them. Once they find a grub, they sting it and lay an egg on the grub. When the wasp egg hatches, it starts eating the grub.

*Tiphia* wasps are solitary (they live alone and not in hives or nests) and are approximately 0.5" long. They are black and slender with 2 pairs of wings. The adult wasps depend on nectar and pollen from flowers for food. To encourage spring *Tiphia* wasps in your neighborhood, plant peonies such as 'Big Ben' and 'Festiva Maxima'. The summer *Tiphia* wasps appear to prefer wild carrot, otherwise known as 'Queen Anne's lace'.

# Monarch Butterfly Life Cycle



**Egg**

Adult Monarchs lay one small egg on an individual milkweed plant. The egg is about the size of the period at the end of this sentence.

Progressing from egg to adult takes about one month depending on temperature. Larvae consume a lot of milkweed and grow very rapidly. They grow so fast, they need to shed their skin five times before they pupate.



**Adult**

Monarch wings are folded in the chrysalis. The Monarch must pump up its wings using fluid stored in its abdomen. Monarchs live from 2-5 weeks before reproducing and laying eggs of the next generation.

**Larva**



Monarch larvae transform into pupa, also known as a *chrysalis*. The pupa turns to a jade color with gold markings. The chrysalis becomes clear just prior to emergence.

**Pupa**





# Color the Monarch Butterfly



# How To Use Your Bug Kit

- Look at a flower with your magnifying glass and see if you can find the pollen that bees love to collect.
- Find a Japanese beetle and pick it up with your tweezers. Place it in the plastic insect cage. What color is the beetle? How many legs does it have? Do you see it's antennae?
- Find a caterpillar and place it in the plastic insect cage. What color is it? How many legs does it have?
- Pick up a ladybug with your tweezers and put it in the plastic insect cage. How many spots does the ladybug have?





# UConn 4-H

UConn 4-H is the youth development program of UConn CAHNR Extension. 4-H is a community of over 6 million young people across America who are learning Science, Technology, Engineering and Math (STEM), leadership, citizenship and life skills through their 4-H project work. 4-H provides youth with the opportunity to develop lifelong skills including civic engagement and healthy living.

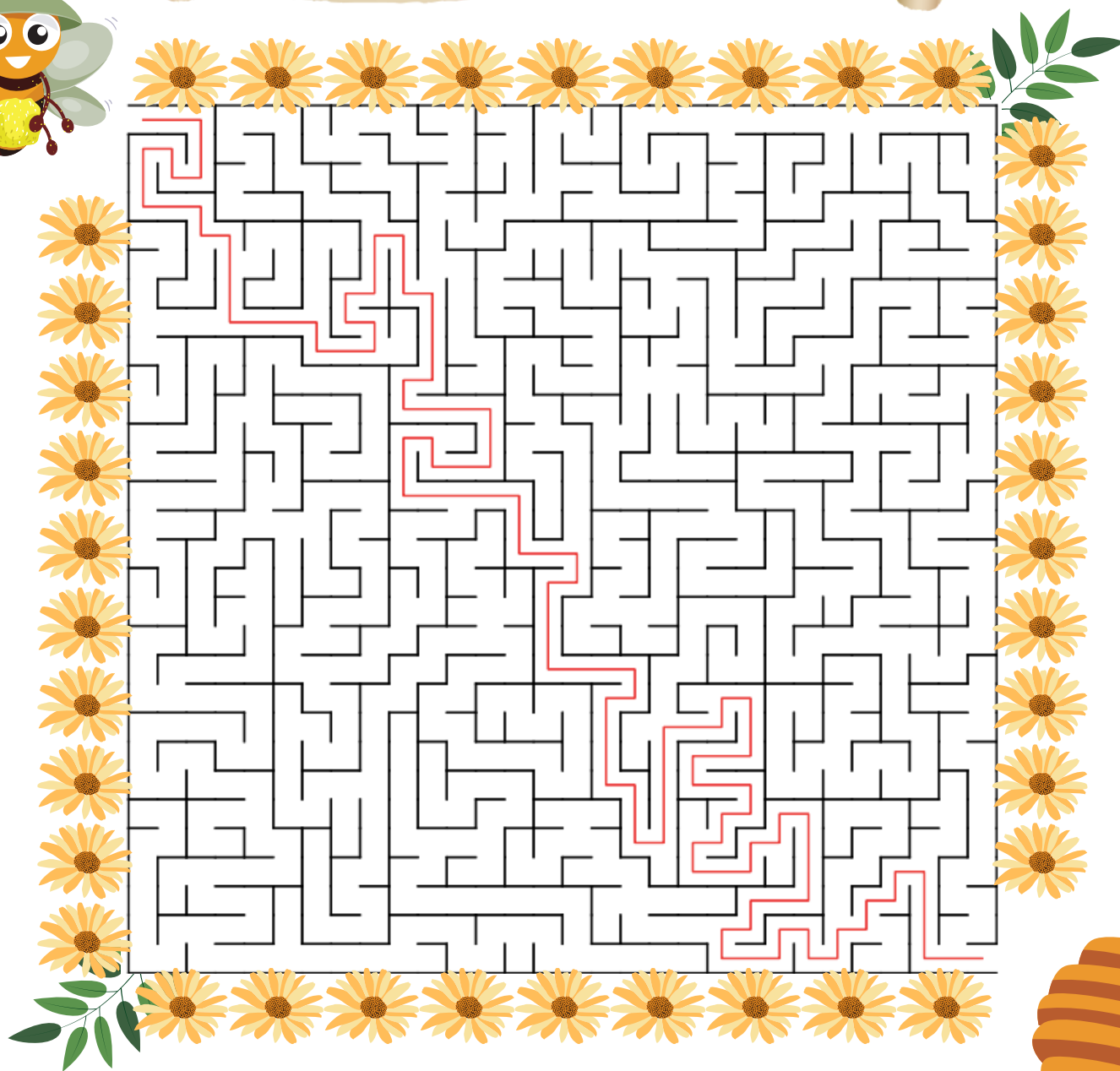
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# Help the Bee Find Her Way Home!





# Bug Week Bonanza II

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Word directions and start points are formatted: (Direction, X, Y)

ANT (S,5,8)  
 APHID (S,17,6)  
 BEE (S,5,1)  
 BEETLE (S,15,2)  
 BUTTERFLY (S,8,2)  
 CATERPILLAR (S,13,1)  
 CICADA (S,17,1)

COCKROACH (S,4,1)  
 CRICKET (S,16,3)  
 DRAGONFLY (E,3,12)  
 FIREFLY (S,1,4)  
 GRASSHOPPER (S,11,1)  
 LACEWING (E,2,11)  
 LADYBUG (S,6,1)

LEAFHOPPER (S,10,1)  
 MANTID (S,7,1)  
 MOSQUITO (S,18,1)  
 MOTH (S,9,6)  
 TERMITE (S,3,4)  
 WASP (S,14,8)



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