Secret Life of Ireland's Bees.

TEACHER BACKGROUND NOTES.

Activity and worksheets 1st & 2nd Classes.

Secret Life of Ireland's Bees.

The "Secret Life of Ireland's Bees" programme is designed to help foster the child's appreciation of environments and his/her responsibility for their conservation and enhancement. Bees are a key indicator species of the well-being of biodiversity within the ecosystem. Bees pollinate up 90% of all flowering plants on planet Earth. That means bees are responsible for most of the fruit and the vegetables we eat, and the beautiful flowers that become nuts and berries and feed the all the other creatures forming the basis for the weird, wonderful, dynamic and complex foodweb that is Earth's biosphere. In recent years it has become clear that bee populations are beginning to decline, we don't know all of the reasons why, but the consequences of bees disappearing are unimaginable.

In order to help understand the reasons why, it is important for scientists to monitor the spread of the species. There are between 101 to 103 species of bee in Ireland. 80% of them are wild, or, solitary bees. The wild bees are responsible for pollinating most of the flowering plants in Ireland, and all round the world. Domesticated honeybees and bumblebees are well documented, little is known about the wild bees. By monitoring in our locality, recording the bees we find and sharing that data with researchers, we might help scientists understand how the wild bee species are spread throughout the country. In this way we can learn the causes and effects of broader environmental change.

By creating a native wild flower garden and building some wild Bee Hotels within the school grounds, it is possible that the school might be able to help with convservation of the important wild bee population by providing them with friendly habitats. When the Bee Hotel becomes populated, it can provide a base for monitoring the wild bee population, over many years. This active learning approach is a basis for undertanding the symbiotic relationship between bees, plants and humans.

Bees as Minibeasts.

Bees belong in the class of *Insecta* in the *Animalia* kingdom and fit into the realm of the *Minibeasts.* Insects are a class of invertebrate with, an exoskeleton (a hard shell on the outside), three body parts (head, thorax, abdomen), three pairs of legs, compound eyes and a pair of antennae. Their bodies are symmetrical in shape. They live in every environment and make up 90% of the known life forms on Earth, the most diverse family of animals on the planet. If all the insects were weighed against all the humans, insects would easily outweigh our successful species.

The study of minibeasts is an effective way to observe biological concepts in the local environment, around the school grounds first hand. They can help us to understand life cycles, food chains, anatomy, habitats and ecosystems. They all play specialist roles for recycling and pollinating within Earth's biosphere and are important for understanding the state of biodiversity in the environment.

Bees have evolved from the wasp family (Crabronidae). Wasps are carnivorous predators living mainly on smaller insects. Bees evolved as vegetarian pollen-eaters, getting their protein and nutrients from pollen. The earliest known bee fossils date from the early Cretaceous period, 100 million years ago. Bees are found on every continent except Antarctica and in every habitat that contains flowering plants.

Honeybees come from the genus *Apis Mellifera* (Latin for "honey bearer") as they collect and store honey. Other species do this, but not to the same extent. Early human civilizations knew how to collect honey from wild honey bees, which we can see on rock paintings from 15,000 years ago. Later they learned how to train, or farm them, 4,500 years ago. There are approximately 20,000 bee species and the honeybee is one of them. The honeybee is in the *Apis* family of which there are 44 subspecies.

Honeybees v Wild/Solitary bees.

Domesticated Honeybees provide us with honey and beeswax and they have also been trained to pollinate farmed crops. They live in hives which are built by humans. In the hive they build honeycomb out of wax to store nectar and pollen and, also, as a cell for the larvae to grow in. They have a highly organized social structure and communication system, which scientists are just beginning to understand.

Hive colonies can accommodate up to 40,000 bees (estimates vary up to 80,000 bees) at any one time. There is only one Queen in a hive. She is the mother of all the other bees in the hive, most of which are females unable to reproduce. So all the bees known as *'workers'* are females. Male bees are called *'drones'*, their main job is to mate with queens and form new hive colonies. The Queen and some of the other bees can hibernate over winter. A queen can live for up to 7 years.

Honeybee workers have a *'stinger'* but can only sting once. The stinger is barbed. When it stings it rips its abdomen apart and dies. They will only sting if it or the colony is attacked.

Bumblebees come from the family *Bombus.* They live and build their nests in the wild. There are about 250 known species. Most bumblebees live in colonies, some burrow, others build a wax nest on the ground or in logs. All of the female bees can lay larvae but, only the queen can lay female larvae. The colonies last over a season, but some queens over-winter. They feed on nectar and pollen, which they also collect for their larvae. They are important to humans because they pollinate crops. They are important for biodiversity because they are a major pollinator of wildflowers. The stinger is pointed, not barbed like the honeybee. Bumblebees can sting many times without doing themselves any damage, though they are not really known to sting unless attacked.

Solitary Bees make up the vast majority of known bee species (80-90%) and include many *genera;* Carpenter bees, mason bees, leafcutter bees, sweat bees, digger bees, etc. They are solitary in the sense that every female is fertile and lays her own brood in a nest built by herself. There are no workers. They can live in simple holes in a wall or a tree, hollow twigs, some dig burrows. Once the mother has built her nest and sealed it off she will die.

They pollinate up to 70% of farmed crops and 80-90% of all the other flowering plants. Many of the solitary bees collect pollen from a single, or a small number of, plant species. They are specialists and have a symbiotic relationship with the plants they pollinate. They will, however, collect nectar from a range of plants. Solitary bees do not store honey, a little nectar is mixed with the pollen ball for the larvae to feed on as they grow. They live over a season, dying when the winter arrives. Most solitary bee species have no stinger and cannot sting.

Hoverflies can easily be confused with bees. They *mimic* the anatomy, have striped abdomens and make a buzzing sound. Despite their appearance, they have no sting and are generally not harmful to humans unless eaten. They belong in the *Syrphidae* family. In Ireland there are approximately 180 species. Adult hoverflies feed mainly on nectar and honey. The young, called maggots, feed on Aphids and other tiny pests. They do not build a nest, prefering to lay their eggs in stagnant water. They are important to farmers as a natural biocontrol for pests and for their role as adults in pollination.

Pollination

Bees are the greatest pollinators on Planet Earth pollinating up 80% of all the flowering plants. Honeybees have been trained to pollinate crops for food, wild bees are responsible for pollinating most of the other flowering plants in the wider environment. Pollination is important for the spread of plants and as the basis for the complex food web here on our planet.

Plants flower at different times of the year, as the seasons change. In order to attract bees plants produce nectar, a sweet-smelling substance from which bees can make honey, and pollen, which bees feed on. As bees move from plant to plant they collect pollen from the male part of a flower the *stamen.* The pollen falls from the bees' hairy body onto the female part of a flower, the *pistil*, when they visit a new flower, thus pollinating. Bees also collect pollen to store and to feed their larvae. They collect this pollen in pollen sacks on their back legs. When flowers are pollinated they turn into fruit, vegetables, berries or nuts, which contain the seeds. These are eaten by small mammals and birds. The seeds are discarded which helps the plants to spread. The small mammals and birds become the food for bigger mammals and birds.

Most of the fruit, vegetables, nuts and berries we eat are pollinated by bees. It is easier to provide a list of the fruit and vegetables **not** pollinated by bees:

- Fruits not pollinated by bees: banana, pineapple.
- Self-pollinating vegetables: beans, peas.
- Wind-blown pollinated vegetables: sweet corn, beets, carrots.

What would we eat if bees disappeared? How could we pollinate plants?

Foraging.

When you see bees buzzing around, moving from plant to plant, they are looking for food or water, we call this '*foraging'*. Bees forage for different things at different times of the year; nectar, pollen, water, propolis and other materials for their nest.

- **Nectar**: A sugar-rich substance which is used as a carbohydrate food source. Honeybees store nectar as food for the hibernation season (winter). The stored nectar becomes '*honey'*. Plants produce sweet-smelling nectar when they are flowering.
- **Pollen**: Rich in protein. Protein is very important for all creatures, even humans. It helps our bodies to grow strong. Bees surround their larvae with a ball of pollen to eat, which helps them grow and become adult bees. Pollen is collected in pollen sacks on the hind legs of the worker bees.
- **Water**: All creatures need water to survive. Bees do not collect, or store, water but they do need to drink it.
- **Propolis**: A sticky substance that bees collect from buds or other sap sources. It is used to build and repair the hive/nest. It is found on trees and shrubs.
- **Materials for the nest**: Wild bees, bumblebees, hoverflies and wasps build their nests in many different places. Some burrow under the ground, some live in holes in the wall or in the bark of a tree. In order to make the nests comfortable, and warm over the winter months, they are lined with leaves and petals. Mud is used to seal the nest and protect it over the winter.

Honey bees and bumblebees make their nests/hives from wax, a by-product from the digestion of nectar mixed with pollen and propolis.

Life cycle.

Bees undergo a *complete metamorphosis* from egg to adult. There are 4 main stages: egg, larva, pupa. adult. The amount of time this process takes depends on which type of bee it is: *Queen* 16 days; *workers* 21 days; *drones* 24 days. These times are approximate and depend on the species. Most Adult bees only live for about a month, though queens can live for many years.

- Honeybee colonies are perrenial, which means that they exist over many years, with queens living up to seven years by hibernating. Worker bees do not usually live for over a year. Drones survive the winter to help the hive's new young queens to establish hives of their own in new locations.
- Queen bumblebees emerge in the late summer and early autumn in order to find a nest to hibernate in over winter. They are usually the first bees that we see in the spring, some as early as February.
- Solitary bees have a much shorter life-span than the other species of bee, in the case of the mason bee it only lives for about six weeks in the summer. There are no queens or workers, just females and male drones. When the females build their nest and lay their eggs, they die and do not tend for their young. The larvae hibernate over winter, feeding on balls of pollen and nectar and emerging in the spring.

Communication.

Insects have a highly developed communication system and bees probably have the most interesting. When bees *buzz* it is caused by their wings which flap at an incredible 250 beats-per-SECOND. That's fast! They do not communicate through the buzzing sound, instead they communicate through smell (pheromones) that they sense through their antennae. These allow them to pass messages and leave trails. They also use the strange and complex 'Waggle Dance'. Modern scientific methods are helping scientists to understand how the bees are able to communicate and find a specific group of flowers up to 2 km from the hive.

Conservation

Since the 1970's, scientists have noticed a decline in the spread of bee species. In 2013 this decline became quite sharp, with nearly 33% worldwide (up to 50% in Ireland) of honeybee colonies failing to survive the winter. Pesticides and modern farming methods, disease, parasites and climate change are all contributing to the decline. So far scientists are unsure which is the main cause. Domestic honeybees are able to be monitored and we can observe how they are affected, but the wild/solitary bees are more difficult to monitor.

We can help the solitary bees by providing a friendly habitat for the to live in. Planting a wildflower garden can provide them with the food the need, building a Wild Bee Hotel can provide a place to build a nest and lay eggs.

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1st & 2nd classes *bee* friendly by exploring the school grounds and finding out about habitats that wild bees might live in, discovering how, where and when bees live. They can learn about biodiversity by observing the minibeasts in the school ground and about anatomy by making a papier-maché bug-eye mask, also, how bees communicate, do you know the 'Waggle Dance'?

I'm looking forward to coming to your school and creating a ***Buzz* about Bees**!

Activity and Worksheets: Junior Classes.

Skills development:

Working scientifically

- Observing
- Investigating and experimenting
- Analysing
- Recording and communicating

Designing and making

- Exploring
- Planning
- Making

Strands

Living things

- Plants and animals

Materials

- Properties and characteristics of materials
- Materials and change

Environmental awareness and care

- Caring for my locality

These Lesson Plans are designed as stand alone lessons and follow no particular order, they are designed to be used following the 'Secret Life' visit to your school. Some of the resources included in this pack are designed to be used in conjunction with videos and graphics which will be installed on the schools computers on the day of the presentation. The digital resource pack will include an application for use on whiteboards, or classroom projectors, with an easy to use interface for accessing relevant videos and graphics. Resources can also be made available on school student computers.

Title	Bug-eye mask	Arts & Crafts
Age	5-8	
Objective	To create a bee costume. Learning about Bee anatomy. Compound eyes; symmetry, antennae, proboscis, mandibles.	
Learning outcome	Ss will learn about the anatomy of an insect head. Changing materials to make things. Materials; Papiér Maché. Construction.	
Skills development	Designing and making.	
Strands	Living things. Materials and change.	
Time Frame	2-4 days 1 hr sessions over 1 week.	
Resources	Paper strips, ballons, head boppers, party blower, water, flour, scissors, poster paints (red, brown, black), pipe cleaners.	
Video	How do bees eat? How do bees see?	
Graphics		
Assessment		

Bee Anatomy

Insects have three body parts; head, thorax and abdomen. The head has four main components; antennae, compound eyes, proboscis, mandibles, the head parts are symmetrically placed on the head. The Antennae are used to communicate through smell (pheromones) and touch. Compound eyes are made up from many small lenses, none of which is very good on it's own. Bees, and most insects, see in the infra-red spectrum of UV light, red is invisible to them. The Proboscis is used to collect; nectar, pollen, water, propolis. Mandibles are used to help munch up food.

Title	What plants are in our garden?	Field Trip
Age	5-8	
Objective	To identify the plants and habitats around the school grounds. Make a list of plants.	
Learning outcome	Scientific discovery. Ss will learn the tools for scientific exploration and rules for observing nature. Identifying the plants in the local eco-system.	
Skills development	Observing, investigating, recording and communicating.	
Strands	Living things, caring for my locality.	
Time Frame	1-2 hrs, this activity can happen on several occassions over the year, as the seasons and plant life change.	
Resources	Magnifying glass, note paper, pencil, drawing paper,	
Video		
Graphics		
Assessment		

Background

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Plants flower at different times of the year, as the seasons change. In order to attract bees they make nectar, a sweet smelling substance from which bees can make honey. As bees move from plant to plant they collect pollen on their hairy bodies, the pollen falls off when they visit a new flower. When flowers are pollinated they turn into fruit, berries or nuts, which contain the seeds. The fruit and berries are eaten by small mammals and birds, the seeds are discarded which helps the plants to spread. The small mammals and birds become the food for bigger mammals and birds.

Title	Bee anatomy	Arts & Crafts / Vocabulary
Age	5-8	
Objective	To create a bee anatomy poster. Head, thorax, abdomen, 6 legs, wings (2 sets of 2).	
Learning outcome	The names of the body parts of insects. Learning to draw shapes and connect different shapes. Ovals and circles.	
Skills development	Recording and communicating	
Strands	Living things	
Time Frame	1 hr	
Resources	Paper, crayons, poster paint, painting aprons, cloth,	
Video		
Graphics		
Assessment		

Background:

Bees are insects and all insects have similar symmetrical anatomy;

- 3 body parts: head, thorax, abdomen.
- 2 antennae.
- 2 compound eyes
- Proboscis.
- Mandibles.
- 3 pairs of legs (6 in all).
- Bees have 2 pairs of wings.

The body parts are circular and oblong in shape. Bees are covered in fine hairs which give bees their colour.

Title	Do the Waggle Dance	Vocabulary
Age	5-8	
Objective	To learn about the strange way that honeybees can communicate.	
Learning outcome	Learn about honeybee communication through learning the 'Waggle Dance'.	
Skills development		
Strands	Animals	
Time Frame	15 min	
Resources		
Video	Video: How do honeybees communicate?	
Graphics		
Assessment		

Background:

Honeybees have a peculiar way of communicating. They can use their antennae to smell pheromones, but most peculiar of all is the 'Waggle Dance'. The waggle dance has a set of moves that can tell direction, distance and type of pollen or nectar.

Title	Where do bees live?	
Age	5-8	
Objective	To learn about the different habitats that bees live in.	
Learning outcome	Identifying the difference between honeybee hives and wild bee nests.	
Skills develoment	Working scientifically; Observing; Investigating and experimenting	
Strands	Living Things	
Time Frame	30 min	
Resources		
Video		
Graphics		
Assessment		

Background:

Different bee species build their nests in a variety of ways.

- Honeybees have been *trained* by humans to pollinate crops and to provide honey. They live in hives built by humans. Over 40,000 can live in the one hive.
- Bumblebees build their nests in walls, on the ground, or, under the ground in a burrow. Nests can hold up to 250, but some bumblebees prefer to live on their own, they are solitary.
- Wild solitary bees build their own nest, a hole in a wall or a trunk of a tree, some underground.

Title	Bees v Wasps v Hoverfly	
Age	5-8	
Objective	To learn the difference between bee, wasp and hoverfly markings.	
Learning outcome	Identifying difference between the species.	
Skills development		
Strands	Painting and drawing	
Time Frame	1 hr, can be split over 2 class periods (30 min)	
Resources		
Video		
Graphics		
Assessment		

Background:

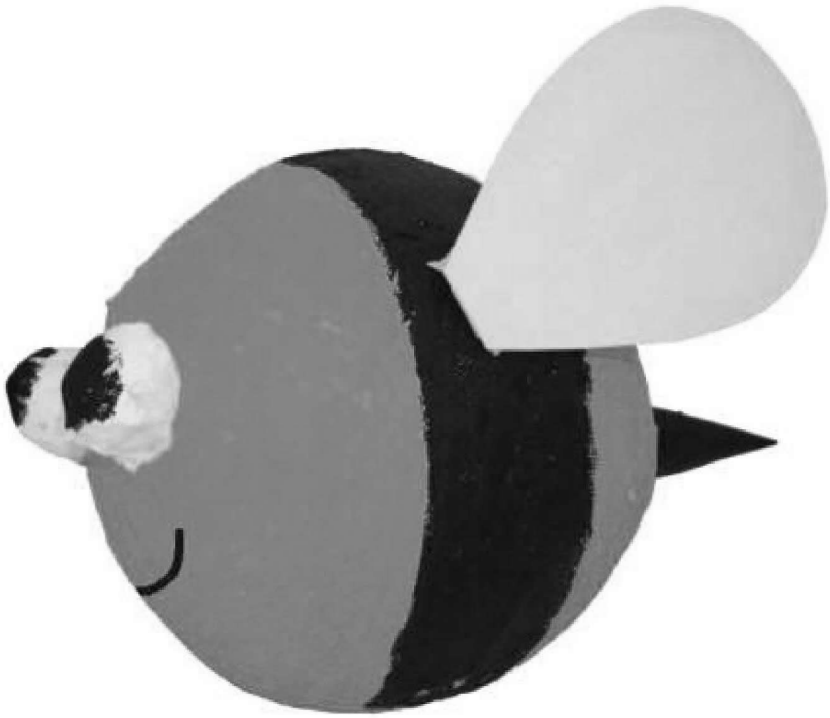
Bees can often be confused with wasps or hoverflies, which are very common in Ireland. They are all insects but their anatomy and markings are different. Bees and wasps come from the same family, they are about the same size, have 2 sets of wings, wasps tend to be more yellow than bees, Irish bees being mostly brown. Hoverflies are from a different family but mimic bee and wasp markings as a defence mechanism. They have no stinger and are not really dangerous to humans, unless eaten. We can identify them because they only have 1 pair of wings and their abdomen is flatter than bees and wasps.

ACTIVITY SHEETS:

The following pages contain resources freely available online. They are collated here for ease of access, Secret Life has no claim to these resources and offers them freely for educational purposes. All rights remain with the copyright holder. These activities are designed as stand alone lessons and follow no particular order.

DLTK's Crafts for Kids

Bumblebee Paper Mache Craft



This is a relatively easy paper mache project that uses a balloon as the base. The project can be filled with candy and made into a pinata or it can just be used as a decoration.

Materials:

- 1 balloon
- tape
- newspaper ripped into strips
- flour
- glue,
- scissors,
- scrap paper for the eyes and stinger

- black, white and yellow paint,
- paint brush,
- white paper,
- cardboard.

Instructions:

- Read the tips to paper mache for how to make paste and tricks on maching.

- Blow up one balloon all the way.

- Cover the entire bumblebee with 2 layers of paper mache. You MUST do this in one sitting -- if you half mache a balloon it will pop when the mache starts to dry.

- Let the project dry completely (12 to 24 hours depending on your humidity level). You can put a fan near it to speed up the drying.

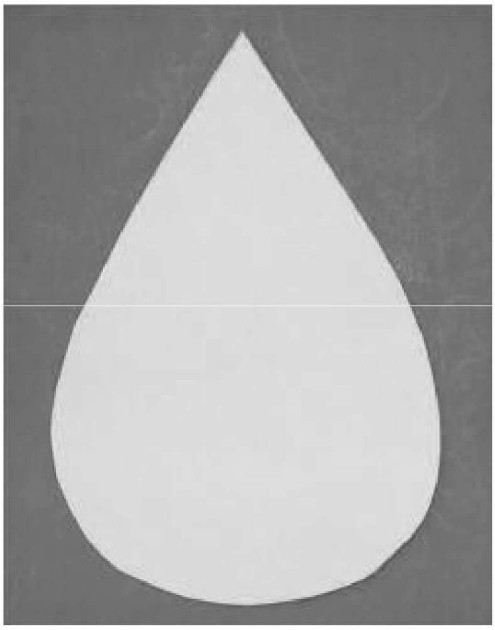
- If making a pinata:
    - cut an opening in the top of the bird. (Use a damp cloth to soften the mache if you have trouble cutting the opening).
    - Fill with candy or small toys.
    - Add a string or rubber band that is attached to the inside of the bird -- make sure you attach it inside but don't let it completely disappear when you paper mache (you'll use this string or rubber band to hang up your pinata.
    - Tape shut.

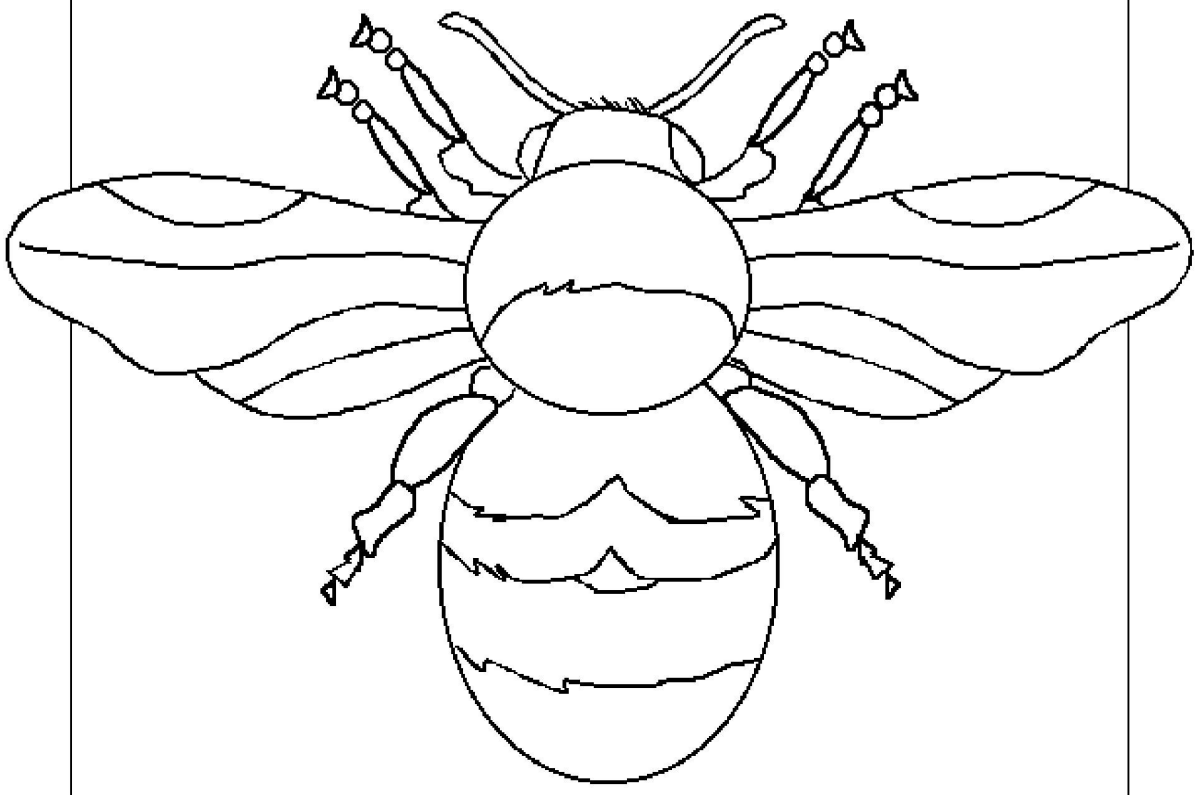
- Use scrap paper to make the eyes and the stinger. For the eyes scrunch up the paper like you are making a ball and tape them to the front of the paper mache'd balloon. For the stinger make a cone out of paper and tape it to the back of the paper mache'd balloon.

- Once dry, cover the entire bumblebee with 1 or 2 more layers of paper mache covering the eyes and stinger so it makes a bumblebee shape. I like to use scrap white paper or paper towel for this layer since it's easier to decorate. Don't let the paper mache be too wet or it may start to soak the project and cause it to crush. If this starts to happen, stop, let it dry and then continue.

- Let the project dry completely (12 to 24 hours depending on your humidity level). You can put a fan near it to speed up the drying.

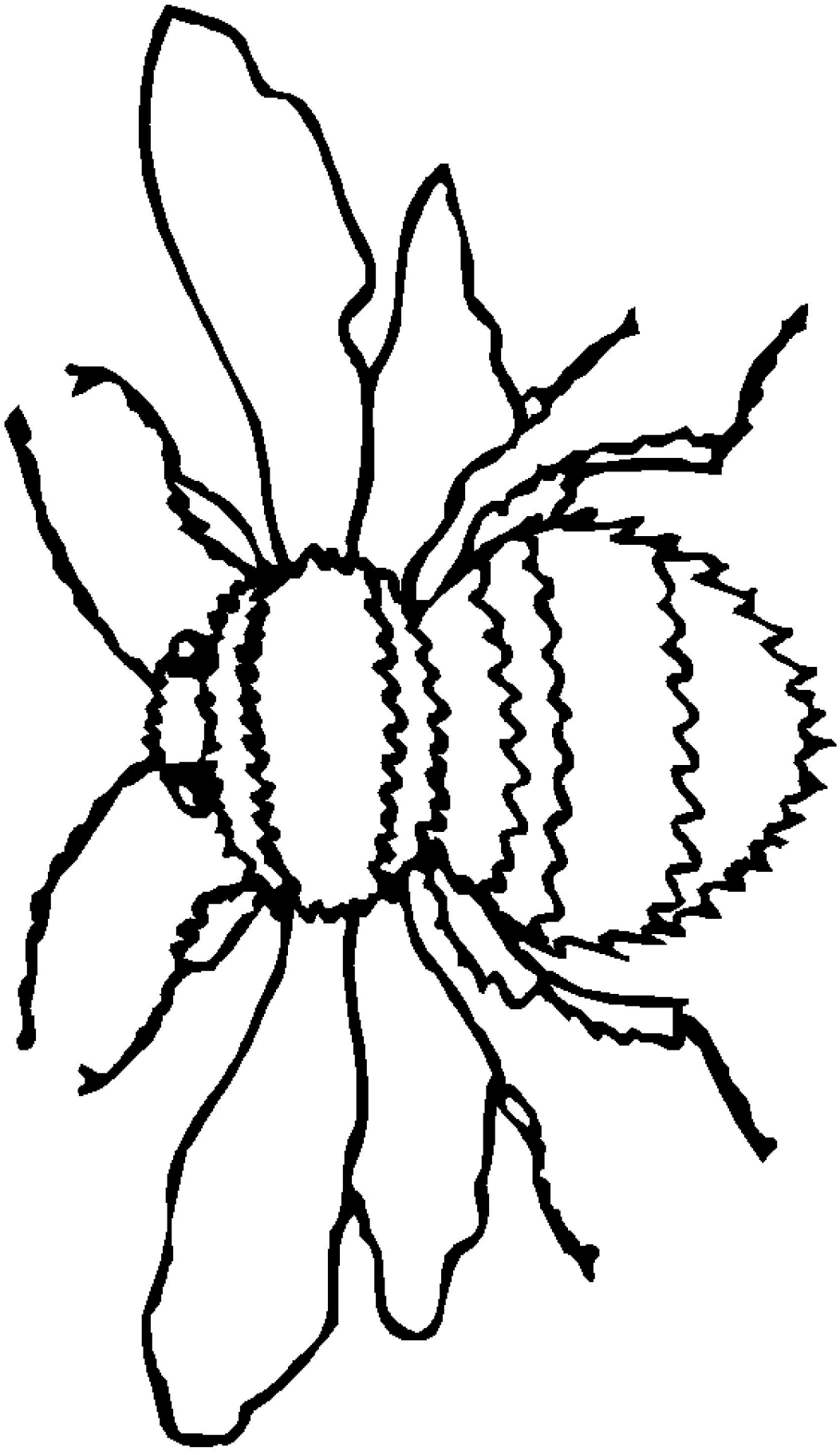
- Paint the project yellow and let dry.
- Paint a black stripe down the center of the bumblebee.
- Paint the stinger black and the eyes white with a black circle in the middle.
- Paint a black mouth onto the bumblebee.
- Cut out two wings from white paper or construction paper, they should be teardrop shaped. Glue them to the bumble bee where the wings would go. If you want your wings to be more sturdy, support them with cardboard or cardstock.

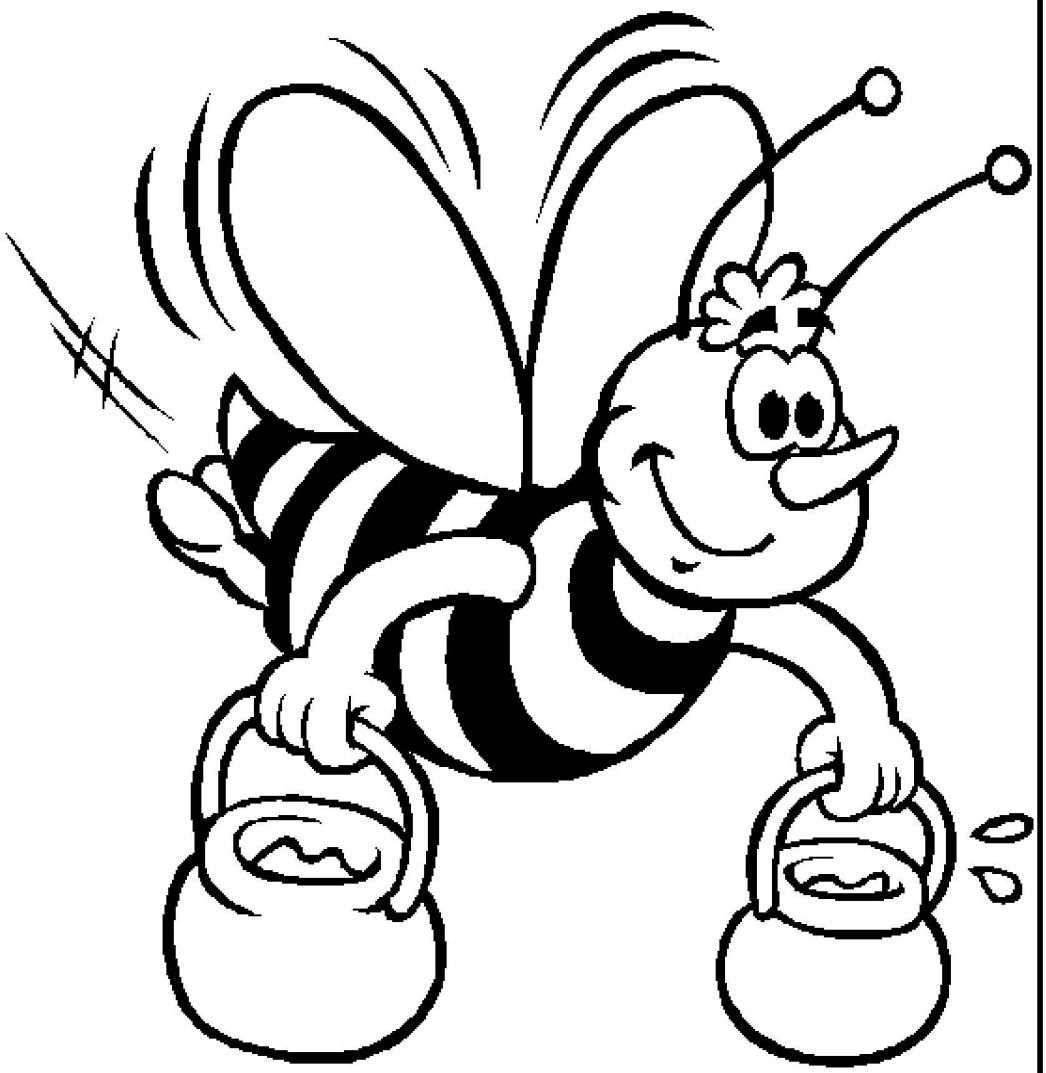




BUMBLE

BEE





Bb is for

Bumblebee

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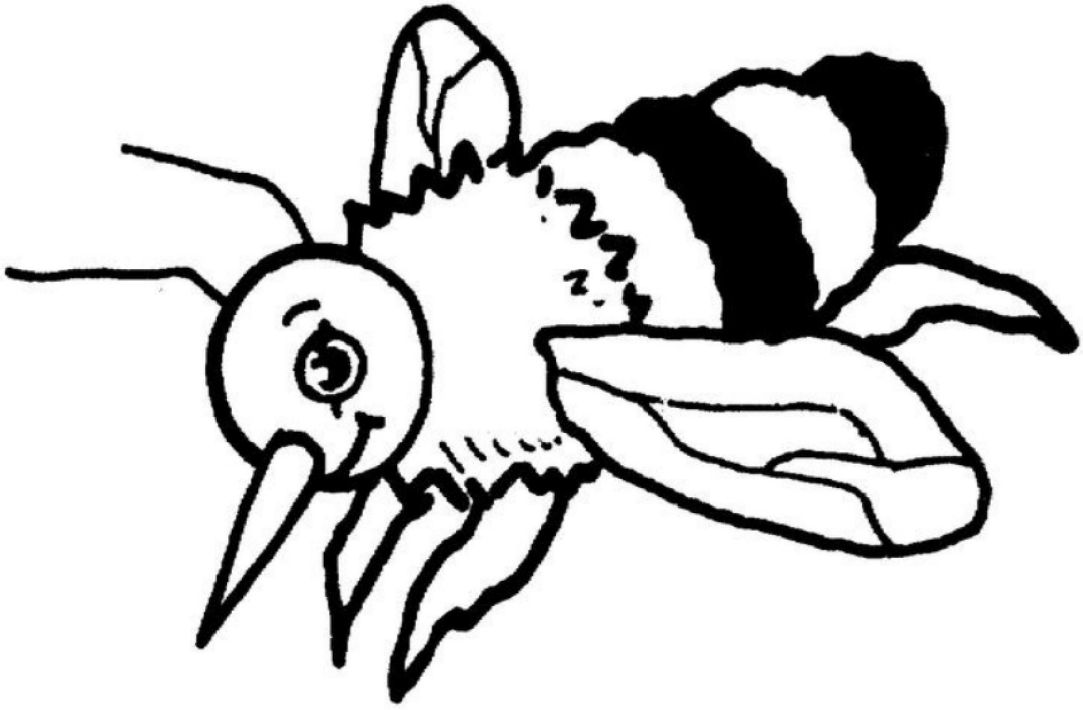

bee

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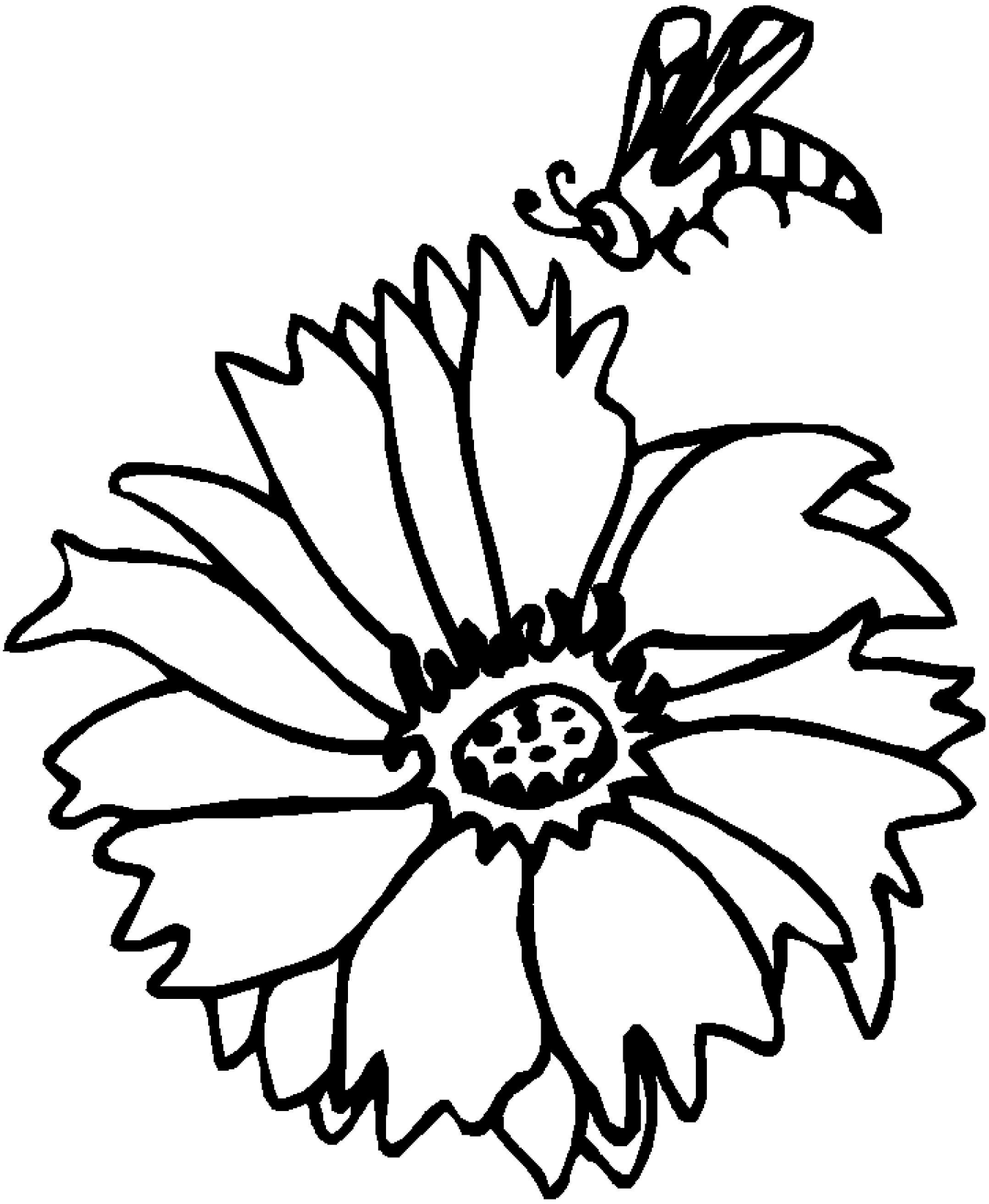
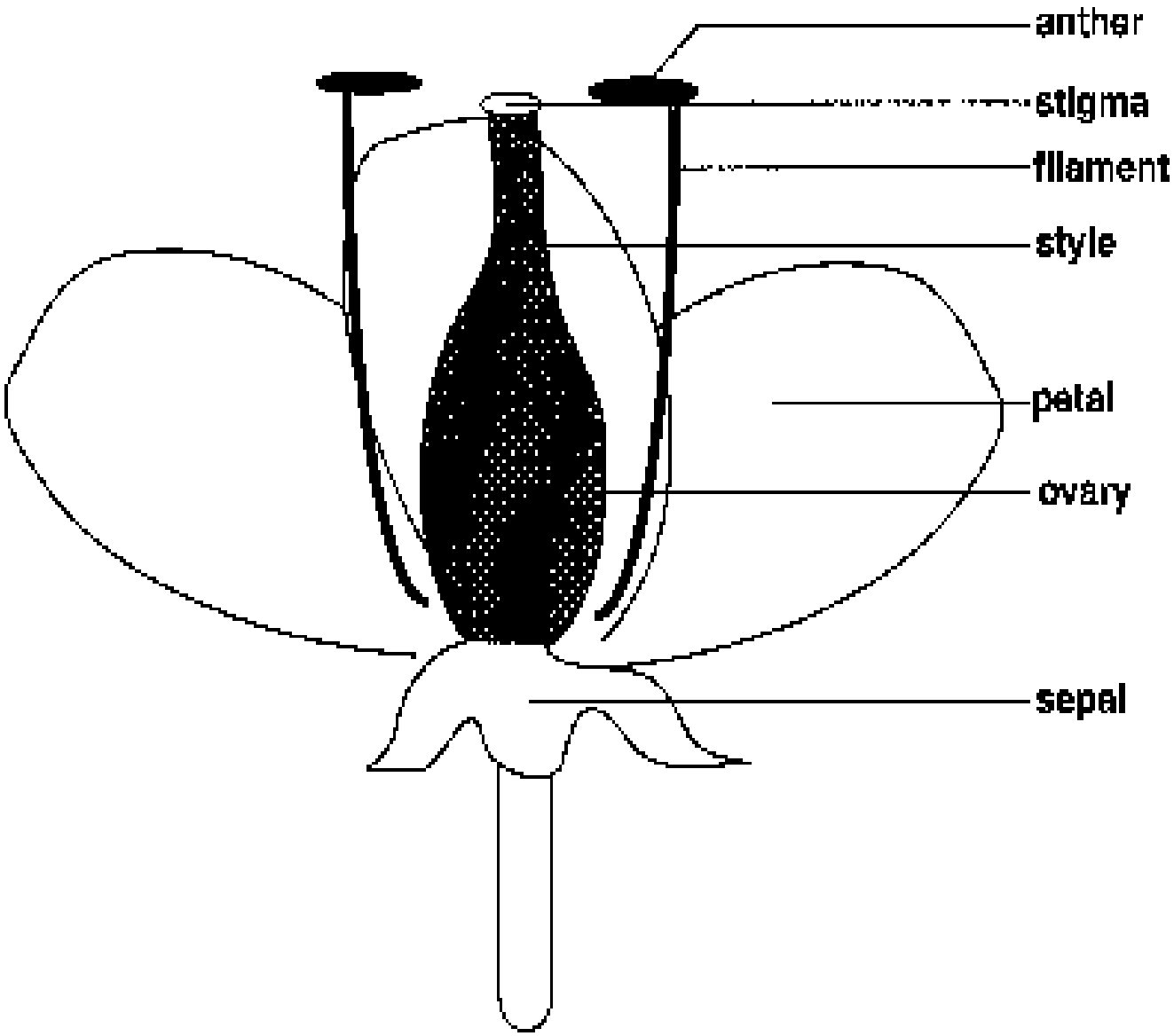
Beehives

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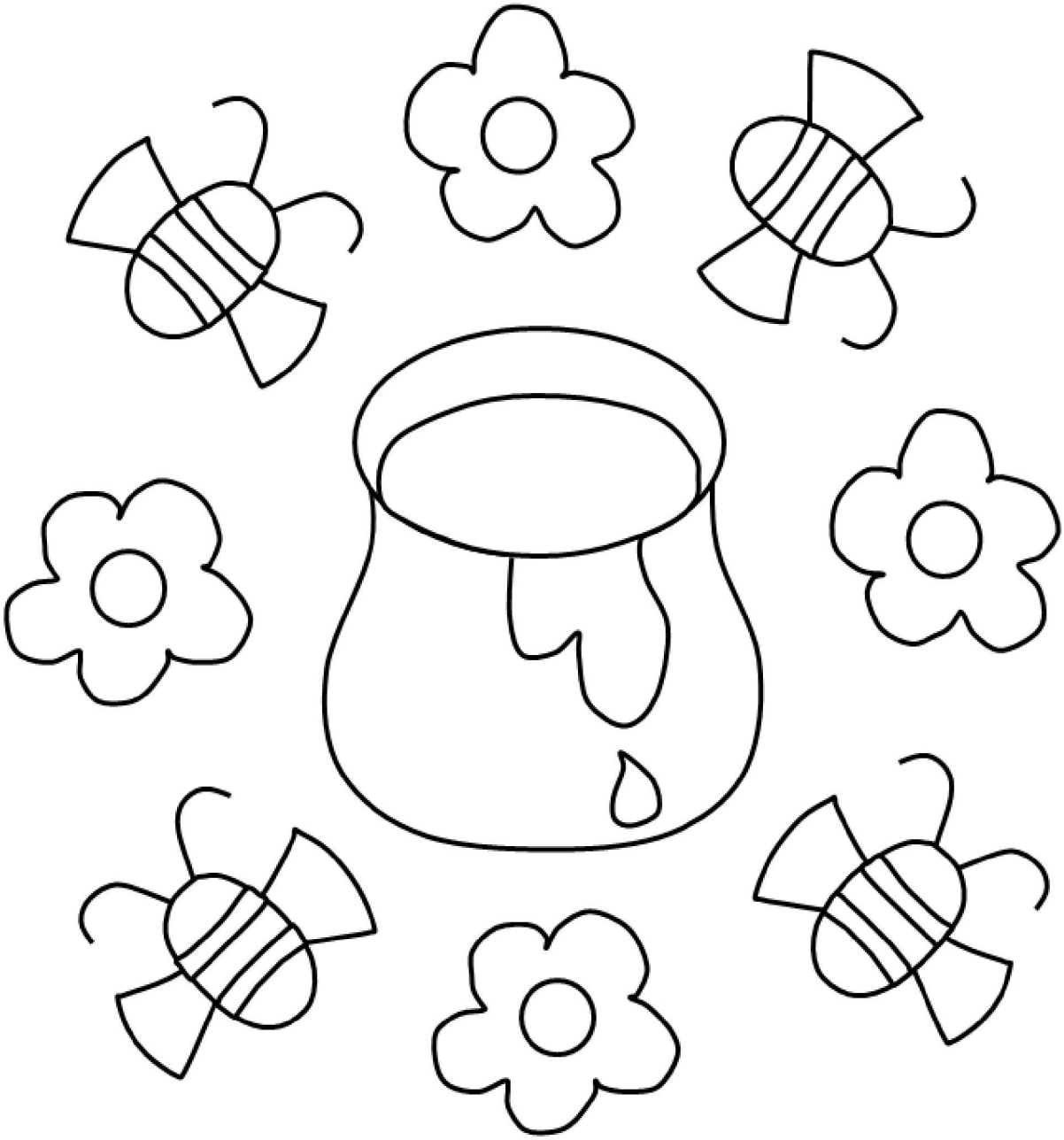
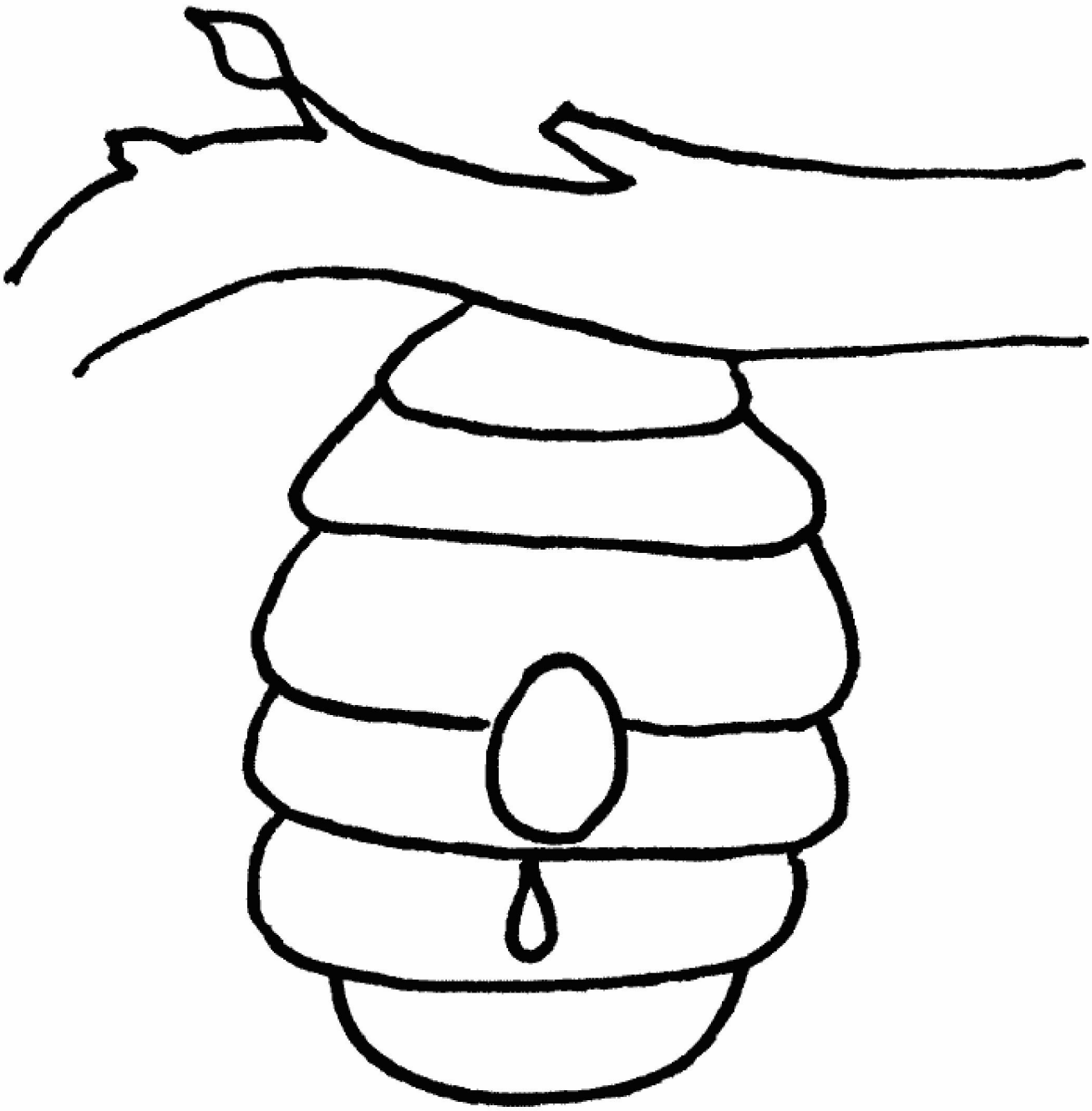
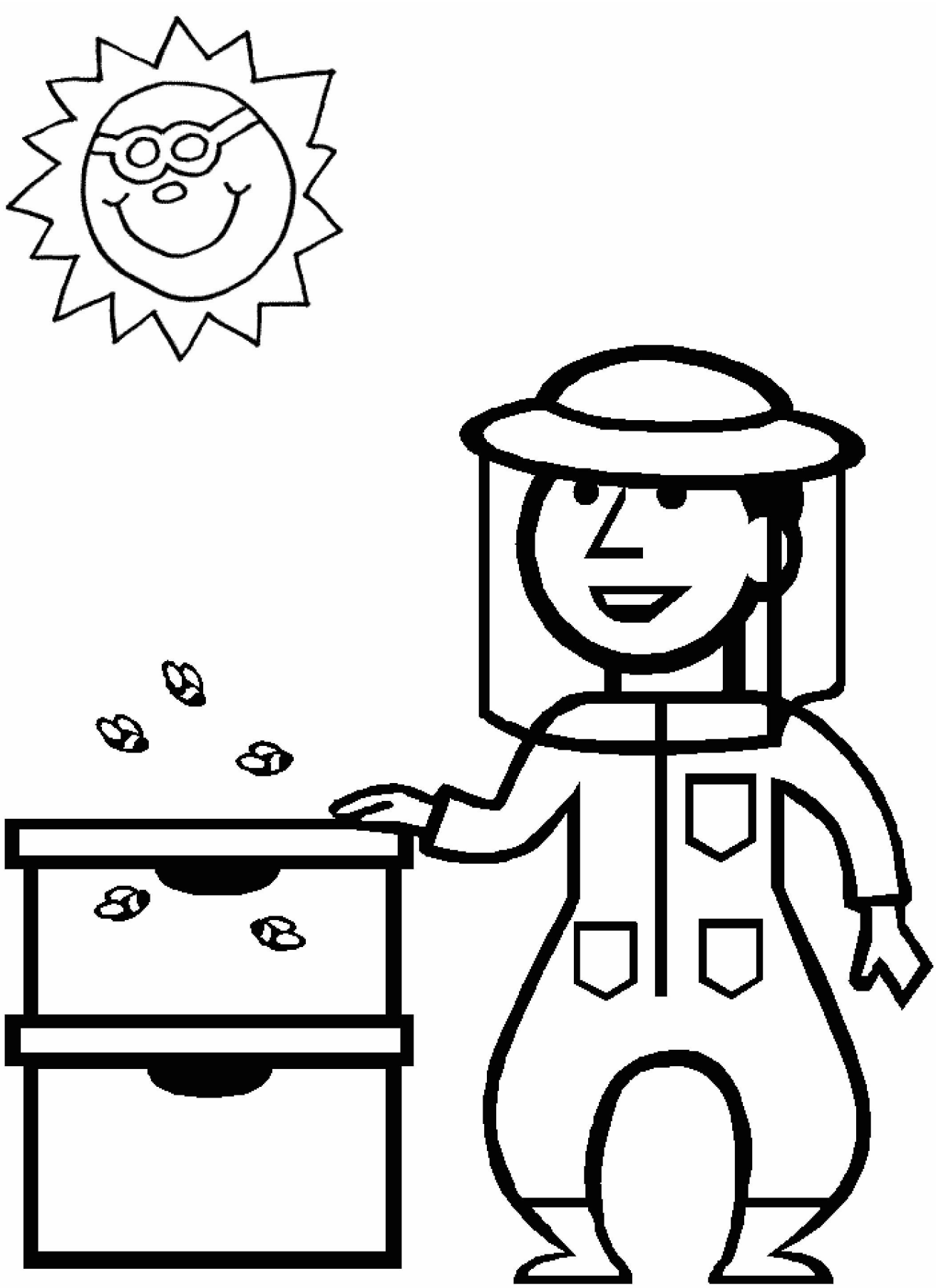
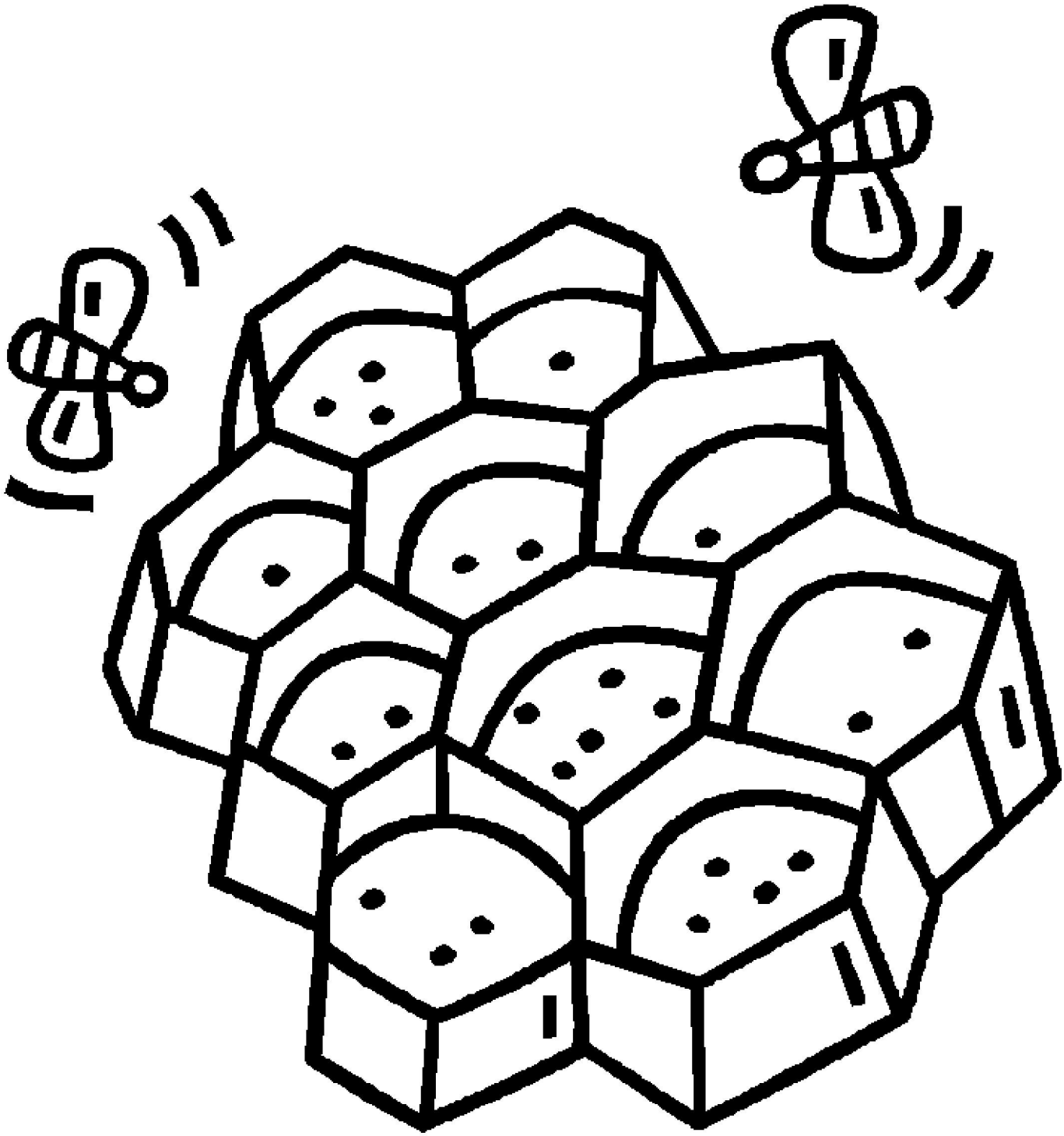


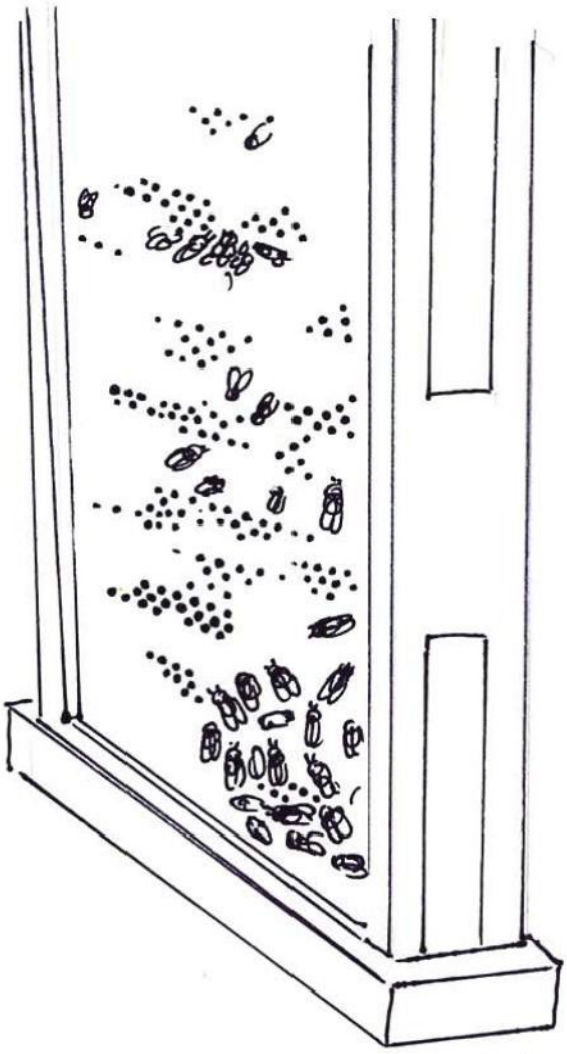
honey





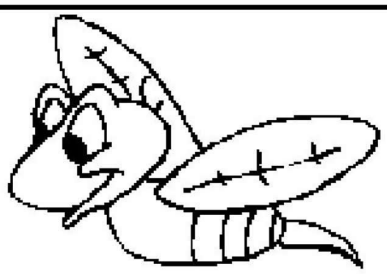


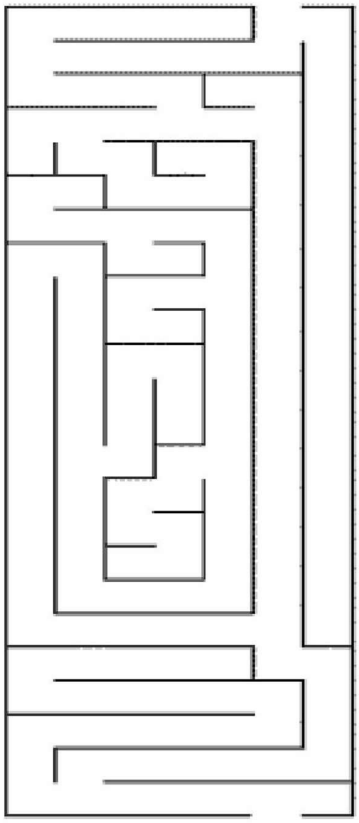
Observation hives help introduce beekeeping to young people.

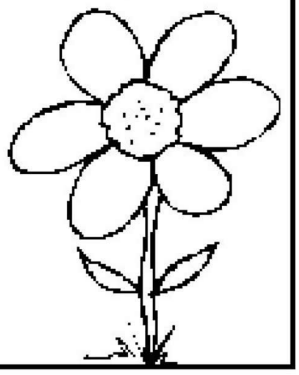


Find out what all of the BUZZ is about!

READ A BOOK

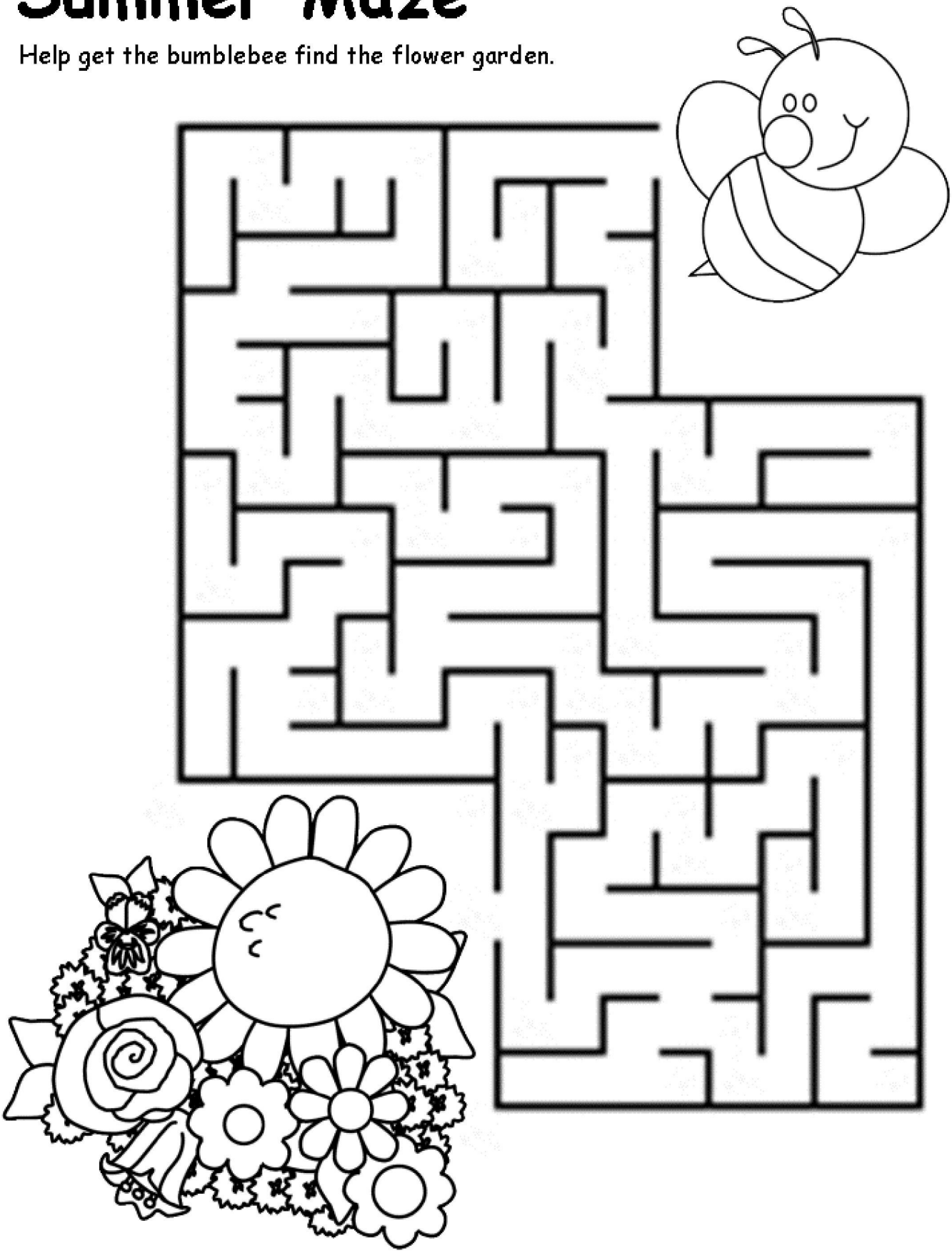






Summer Maze

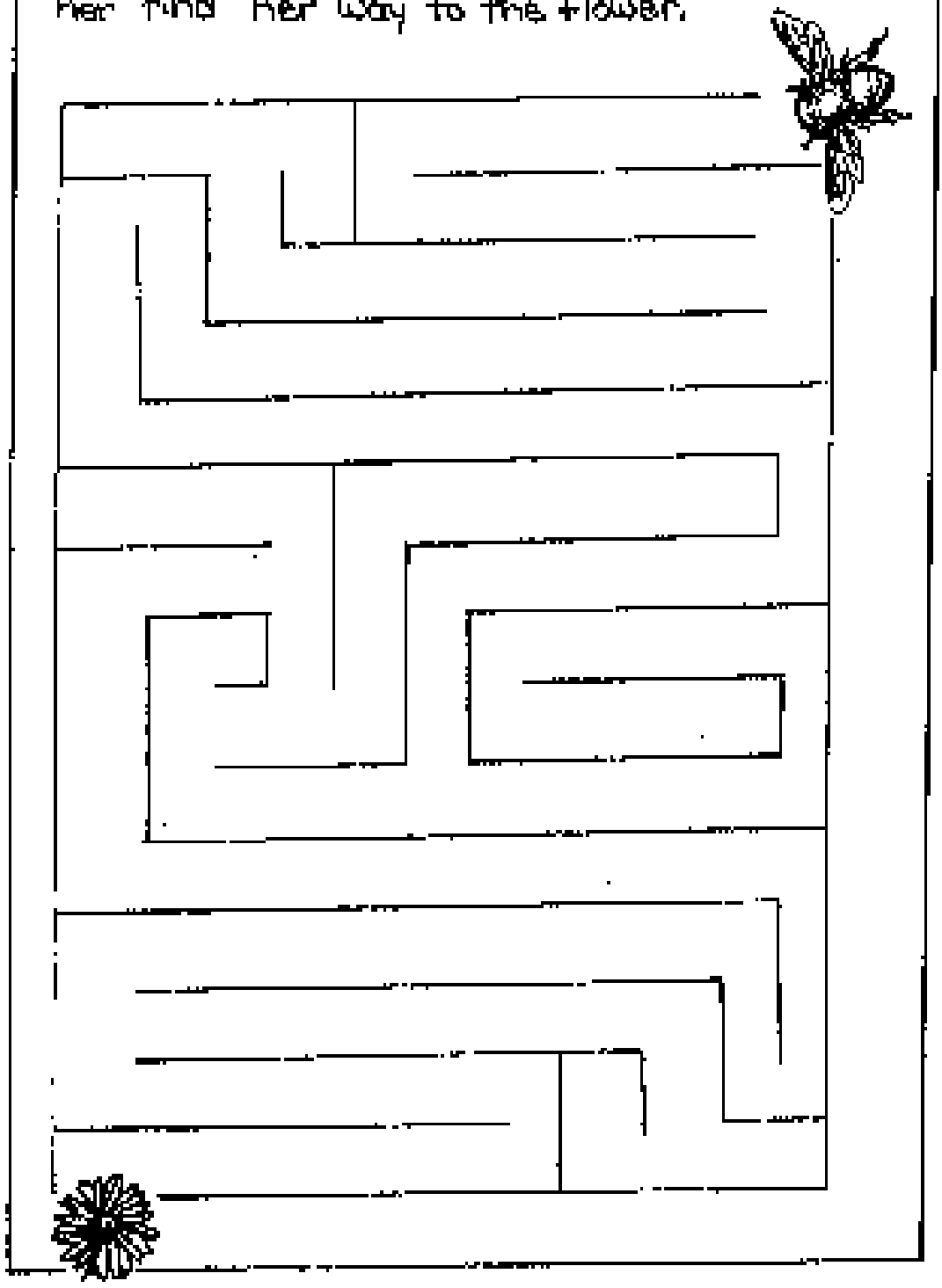
Help get the bumblebee find the flower garden.



Dancing Bees

Honey bees tell each other things by dancing. The dances tell worker bees where to find food.

This bee has lost her dancing friends! Help her find her way to the flower.



Dances with Bees

A honeybee hive needs a lot of honey, and that means a lot of flower nectar. When a scout bee finds flowers, she (almost all bees are shes) goes back to the hive to tell the other bees where the flowers are. How does she tell them? She dances!

If a scout bee performs a Round Dance, the other bees know there are flowers very near the hive.

A Waggle Dance means there are flowers far from the hive. But where are they?

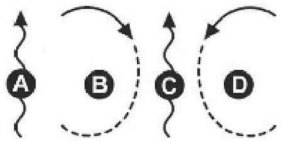
Can you do a dance that will explain where to find food? Give it a try!

Let's try a waggle dance!

Here's what to do:

Here's all you need
- at least one friend
- a flower (or a drawing of a flower)

1. Pick a hive area in the room, where all the bees hang out.
2. Choose one person to be the scout bee. That person should secretly hide the flower somewhere in the room where no one can see it.
3. The scout bee goes back to the hive and performs a Waggle Dance that will tell the other bees where the food is. The diagram at right shows the dance steps.

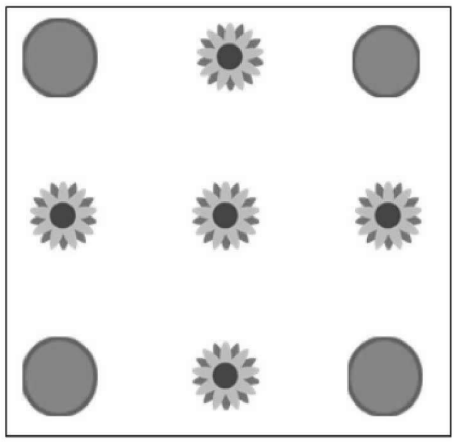


4. Perform the dance so that the "waggle line" (steps A and C) points to the food. The speed of your waggle tells how far the food is -- waggle fast if the food is close (honeybees can waggle 15 times per second).
5. The other bees in the hive should observe the dance and then fly off to see if they can find the food. *Did the scout bee's dance help them find it?*
6. Next, have someone else try being the scout bee!

Here's more about bee dancing:

Inside a bee hive, where scout bees do their dancing, it is completely dark. So how do the other bees figure out the dance? They take turns holding on to the scout bee while she performs, and are able to feel what the dance is communicating. When the scout performs the dance quickly and includes lots of waggles, the flowers are very near the hive. The dance also shows what direction the food is. Performing it straight up the walls of the hive means the flowers are in the direction of the sun. If food is 30° to the right of the sun, the scouts perform the dance 30° to the right of straight up. It's kind of like a dance on a compass!

Pollen Game



What you will need:
A large open space, i.e. a games hall or garden
Buckets or hula hoops (the flowers)
Bean bags or small balls (the pollen)
Teams of children (the worker bumblebees)
One hula hoop per team (the nest)

How to play:

1. Split the children into teams of equal size and give each team a hula hoop (a nest – blue in diagram).
2. Place hula hoops containing bean bags/ small balls around the hall, ideally an equal distance from each team's nest. These represent the flowers which contain the pollen (pink flowers in diagram).
3. Number the players in the team. When you shout out a number, the corresponding child from each team has to run to a flower, collect a piece of pollen and bring it back to the nest. Only one piece of pollen can be carried at a time. This is repeated until the pollen has run out.

The **aim of the game** is for each nest to collect as much pollen as possible before the pollen runs out. It is a race and the team with the most pollen in its nest at the end is the winner. Make the game easier/ harder by adding/ taking away pollen.

In nature bumblebees need pollen and nectar from flowers to survive. If the pollen or nectar was to run out the bees would eventually die. This is why it is really important that we plant lots of pollen- and nectar-rich flowers in our gardens; so that there are plenty of flowers throughout the year to feed all of the bees.

A **variation for this game** would be to replace the pollen (bean bags) with nectar (water) and give each team a cup/ jug to carry the nectar from the buckets (the flowers) back to their nests (also buckets). The team with the largest volume of water at the end of the game would be the winner. This variation would be best played outdoors.

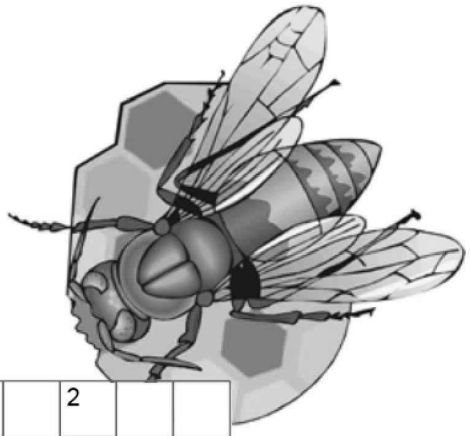
Or, why not use bumblebee names instead of numbers for each team member.

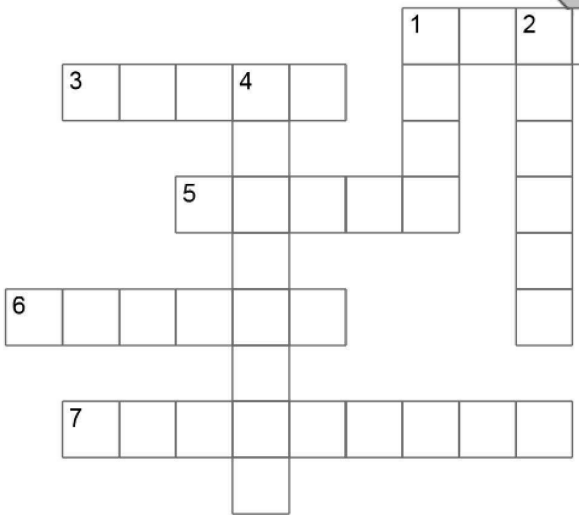
Name:

Date:

Bees Crossword Puzzle

Complete the activity.





ACROSS

1. A sweet fluid produced by bees from nectar
3. Bees depend on this for their defense
5. Male bee whose only function is to mate with the queen
6. Dustlike cells of the anthers of flowers
7. Cells where honey is stored

DOWN

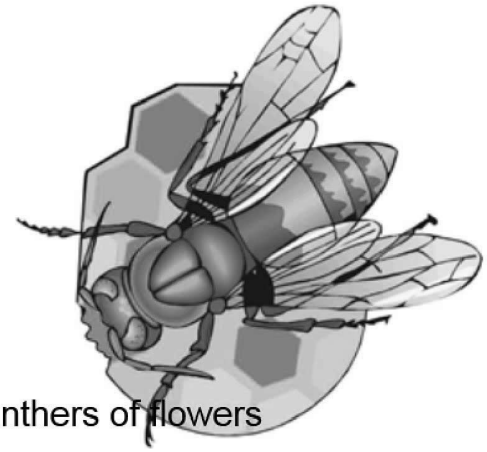
1. A structure for housing bees
2. Sweet liquid of flowers gathered by bees for making honey
4. Worker bee that attend to the queen, the babies, or larvae of the hive

Name: _____

Date: _____

Bees Vocabulary

Complete the activity.



1. _____ Dustlike cells of the anthers of flowers
2. _____ Male bee whose only function is to mate with the queen
3. _____ Worker bee that attend to the queen, the babies, or larvae of the hive
4. _____ Female bees who collect nectar and pollen from flowers
5. _____ A structure for housing bees
6. _____ Bees depend on this for their defense
7. _____ Cells where honey is stored
8. _____ Sweet liquid of flowers gathered by bees for making honey
9. _____ Female bee whose only job is to lay eggs
10. _____ A sweet fluid produced by bees from nectar

honey	nurse bee	honeycomb	hive
sting	drone	worker	nectar
queen	pollen		

Name: _____

Date: _____

Bees Challenge

Complete the activity.

___ 1. Cells where honey is stored
A. worker B. sting C. honeycomb D. hive

___ 2. A sweet fluid produced by bees from nectar
A. nectar B. nurse bee C. honey D. drone

___ 3. Bees depend on this for their defense
A. pollen B. sting C. nectar D. queen

___ 4. Sweet liquid of flowers gathered by bees for making honey
A. drone B. worker C. honeycomb D. nectar

___ 5. Female bees who collect nectar and pollen from flowers
A. honeycomb B. hive C. worker D. honey

___ 6. Male bee whose only function is to mate with the queen
A. drone B. honeycomb C. sting D. honey

___ 7. A structure for housing bees
A. queen B. hive C. pollen D. nectar

___ 8. Dustlike cells of the anthers of flowers
A. pollen B. honeycomb C. sting D. hive

___ 9. Female bee whose only job is to lay eggs
A. queen B. drone C. sting D. honeycomb

___ 10. Worker bee that attend to the queen, the babies, or larvae of the hive
A. nurse bee B. honey C. nectar D. hive

Name:

Date:

Bees Word Search

Complete the activity.

Y	D	Q	U	E	E	N	B	G	W	H	L	C	G	M	B	A
R	W	R	W	R	S	F	W	Z	B	Q	M	M	T	I	M	R
R	W	A	O	A	H	I	X	S	W	M	J	I	B	U	O	O
B	Y	D	D	N	Z	M	S	O	A	P	T	H	P	K	J	B
E	I	V	F	L	E	X	R	O	C	W	N	B	O	T	T	O
B	N	K	E	B	M	K	V	P	H	F	C	E	S	N	V	Q
O	M	V	B	H	E	R	O	O	P	Z	Y	P	F	D	E	N
Z	I	P	H	R	P	L	N	S	K	P	V	S	M	C	U	Y
D	H	G	N	D	L	E	C	W	C	K	O	W	C	R	U	N
Y	E	U	S	E	Y	B	H	N	K	N	V	L	S	X	M	Y
F	C	I	N	C	F	F	X	V	E	L	T	E	V	O	W	H
Y	E	D	O	S	Y	Z	P	Z	M	C	B	R	Y	Q	I	N
T	F	M	U	O	O	K	J	M	U	E	T	A	A	V	L	Q
Q	B	Y	K	Q	X	L	I	T	E	L	N	A	E	F	G	P
K	W	M	R	B	L	K	E	D	Q	N	S	V	R	W	H	N
N	T	F	B	W	Y	Z	X	H	E	B	V	K	J	A	I	W
J	D	D	S	T	I	N	G	N	N	T	E	P	T	R	S	M

pollen	nectar	drone
honey	sting	honeycomb
hive	nurse bee	queen
worker		

Honey Bee Stinging Apparatus