



Bee Society

# Busy As a Bee

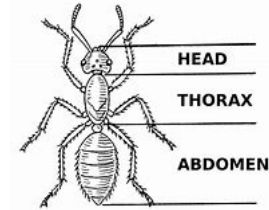




Bees are insects  
and insects are  
arthropods.

- Arthropods include insects like ants and bees, arachnids like spiders, myriapods like centipedes, and crustaceans like pill bugs.
- Tap your forehead, elbow, knee. Can you feel the hard bone under your soft skin? Those bones are part of our skeletons that give structure to our bodies. Our skeletons are inside our skin.

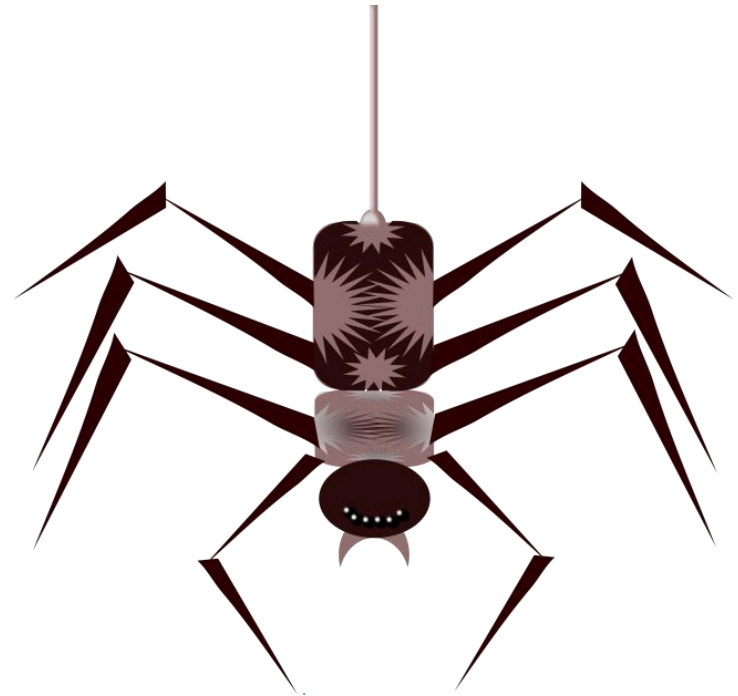
Arthropods have (big word alert!) exoskeletons; that means that their skeletons (hard structures) are outside their bodies like a suit of armor. Their exoskeletons are made of a cellulose like material, chitin, and minerals.



They also have bodies in segments (parts) and jointed (like our knee or shoulder) legs. There are appendages (like our legs and arms) or body parts, attached to the segments.

# Arthropods

- Exoskeleton=skeleton outside so they moult to grow,
- no backbone,
- jointed legs,
- segments=body divided,
- appendages=parts attached,
- cuticle made from chitin.

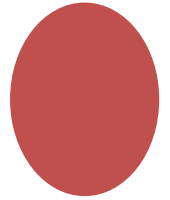


# Bee anatomy

Bees are insects.

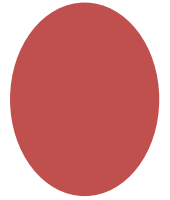
They have three body parts—head (touching head), thorax (touching chest, and abdomen (touching tummy).

The wings (flapping hands) and 6 (3 fingers each hand) legs are attached to the thorax where the muscles are.

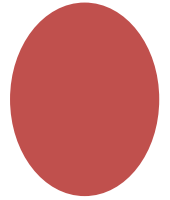


Bees have two big eyes (2 fists) called compound eyes made up of lots of little eyes called ommatidia, and 3 small simple eyes (three fingertips) called ocelli.

Bees have 2 antennae (2 fingers by forehead).



Bees have an exoskeleton—a skeleton on the outside (tapping forehead elbow, knee).





- 2 antenna

- 1 head

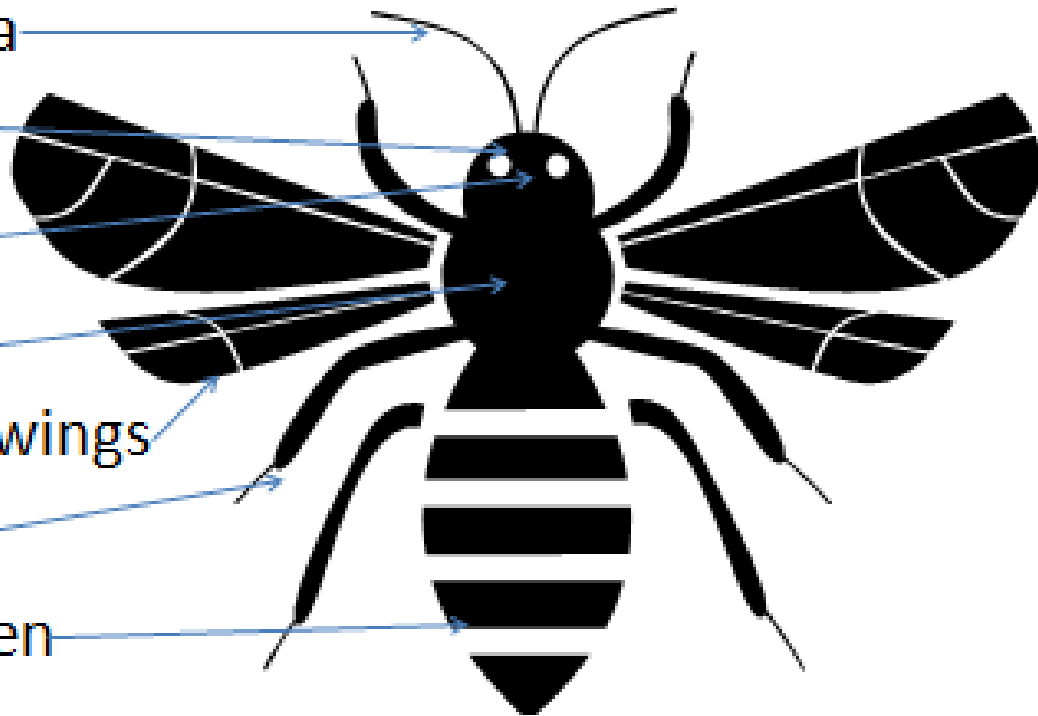
- 2 eyes

- 1 thorax

- 2 sets of wings

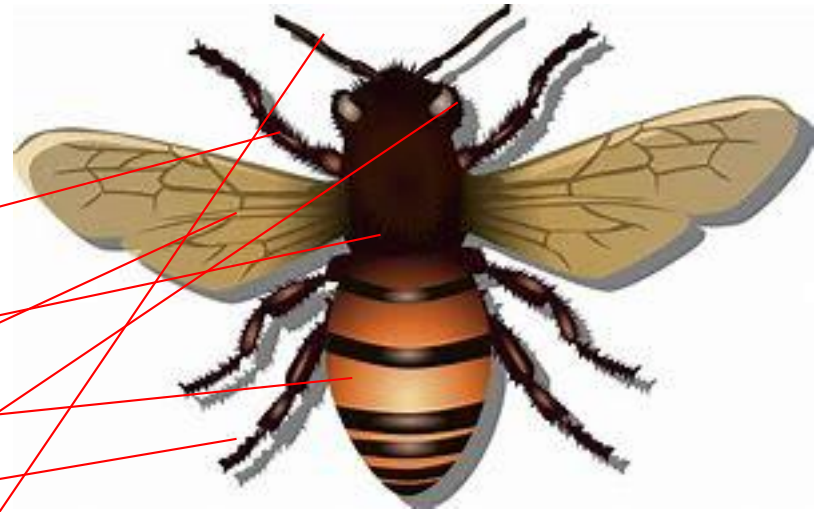
- 6 legs

- 1 abdomen





You can be BEE anatomy! You can sing this song to *Head, Shoulders, Knees and Toes*.



Head, thorax, abdomen, abdomen 2x  
(touch head, chest, tummy)

6 legs, some wings and exoskeleton

(3 fingers each hand, flap hands on shoulders, go head to toes both hands)

Head, thorax, abdomen, abdomen.

Head, thorax, abdomen, abdomen 2x  
(touch head, chest, tummy)

Big eyes, small size and 2 antennae too

(2 fists, pointer fingers together, pointer fingers on head)

Head, thorax, abdomen, abdomen.

Growing Up WILD

Bees have specialized body parts for honey collecting.

The pollen basket collects the pollen.

Honey is stored in the honey stomach.



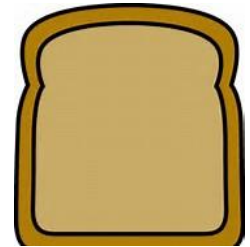
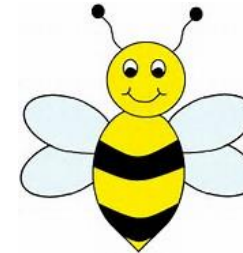
# Bees make three kinds of foods.

Bee milk is made from glands in the bees' heads and is fed to the very young larvae.



©Andy Nornik \* illustrationsOf.com/93558

Bee bread is made from pollen mixed with honey and is fed to the worker and drone brood. It is full of protein.



Royal jelly is a kind of extra rich bee milk fed to the queen.



# How does nectar become honey?

Bees collect nectar from flowers.  
Nectar is 80-95% water.

They also collect pollen in their pollen baskets, and while they are collecting, they are pollinating flowers.

Honey is about 18% water.

When the bees return to the hive with the nectar, they pass it from bee to bee and fan it with their wings and gradually the water is reduced, and more sugar remains.

They store the honey in the hexagonal (6 sided) cells in the honeycomb.



There are different tools for separating and lifting frames.

- Hive
- Comb
- Honey tool
- Hive smoker
- Bee keeping clothing
- Brush



# Hive boxes have several levels.

The bottom board is at the bottom with the hive stand.

The hive body has the frames for the colony.

The honey super is above the hive body and holds the honey for extracting.

The cover is on the top.



# What do we use to extract and process the honey?

First you use the smoker to calm the colony and your hive and frame tools to remove a frame.

The heated knife and uncapping fork unseal the cells.

The frame goes into the extractor which spins out the honey from the cells.

You pour the honey through a double sieve to catch any wax and let it sit to get air bubbles out, before you pour it into jars or bottles.



Bees are social insects. They live in a group called a colony. At different ages worker bees have different roles. Queen bees lay the eggs. Drones help make the babies.







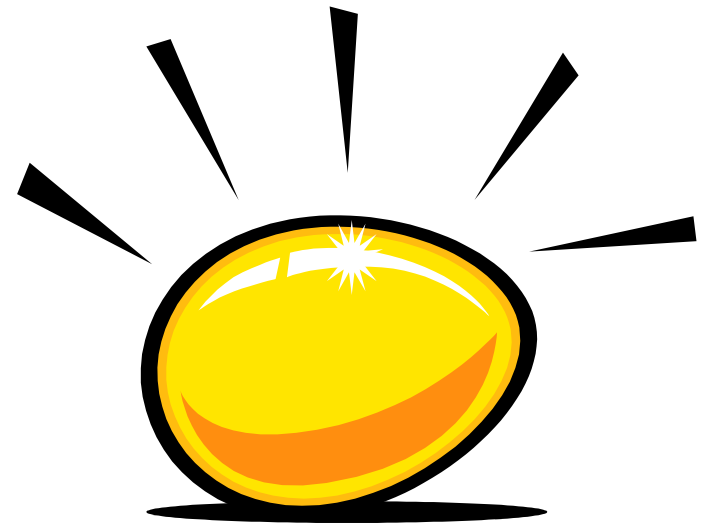
Bee roles include nurse bees that take care of the larvae, housekeeping bees that clean the cells, construction bees that help build the honeycomb, foraging bees that gather pollen and nectar, and guardian bees that protect the hive

---



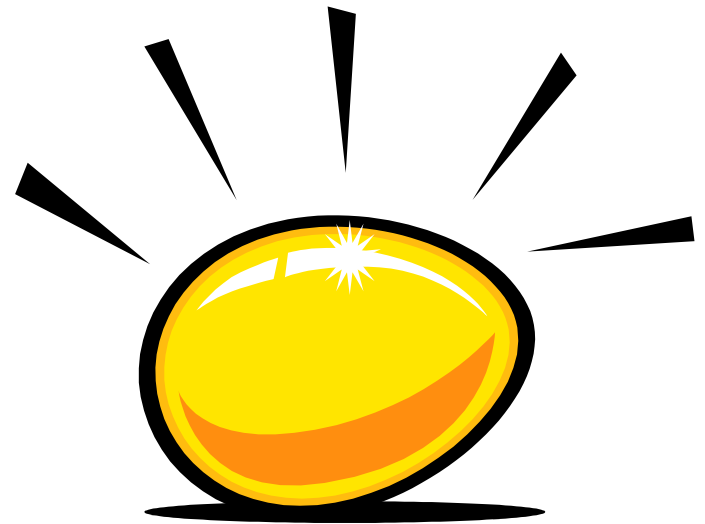
Helps make eggs

Drone=daddy



Lays eggs

Queen=mommy



Food collector

Worker



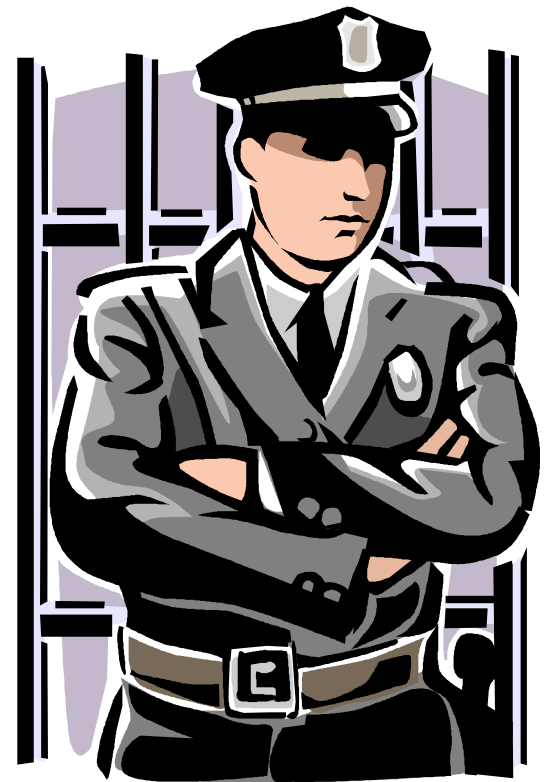
# Worker

Nest builder



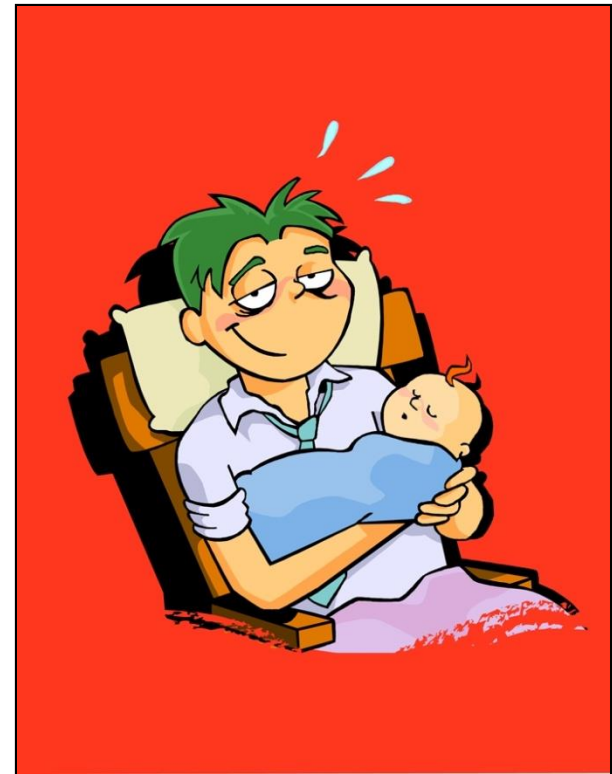
Worker

Protector



# Worker

Daycare, nanny, babysitter, parent



Janitor

Worker





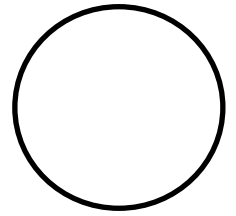
# Worker

Cook

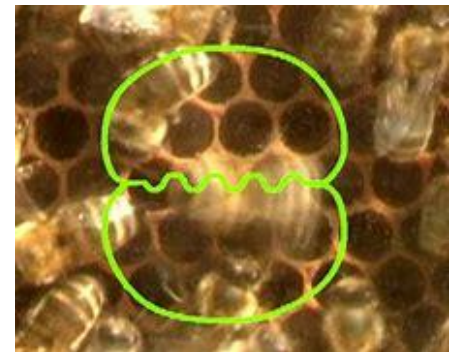


Bees use dances to communicate where to find nectar and pollen.

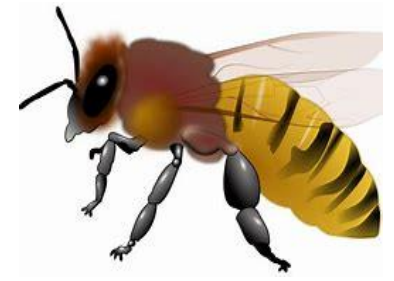
When the source of nectar and pollen is close the bee dance looks more like a circle with the bee shifting clockwise and counterclockwise and is referred to as the round dance.



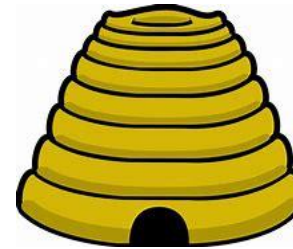
When the source is farther away the dance is called the waggle dance and looks more like a figure **8** with the speed and direction of the waggle indicating both distance and direction.



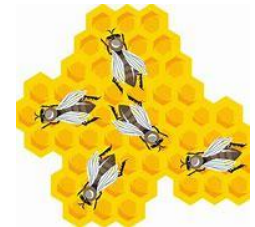
# You can be Finger Bees!



*Here is the honeybee. (pincer finger thumb)*



*Here is the hive. (tent hands)*



*Working together (mesh fingers)*

*To keep bees alive! (clap)*



You can sing the song to *Do Your Ears Hang Low?*

Do you like to buzz? (buzzing sound)



Are you covered all in fuzz? (wiggling fingers)

Do you call a hive a home (triangle hands)



In the garden where you roam? (flying hands)

Do you know how to make honey, (licking finger)

Are your stripes a little funny? (drawing fingers across chest)

Do you like to buzz? (buzzing sound)



You can sing this song to *Jingle Bells*.

Honeybee, honeybee,



Landing on my nose, (touch nose)

Honeybee, honeybee,



Now she's on my toes. (touch toes)

On my arms, on my legs, (touch arm, leg, elbow)



On my own elbows.



Honeybee, oh honeybee

She lands, and then she goes. (hand flies off)

Bees for the bee songs!







Beekeeping is busy busy!

# **BUSY BEEKEEPING**



# Bee clothing

Beekeepers



Bees are social insects with different roles. They live in a colony in the hive.



The hive box has several stories and contains the frames of honeycomb..



Each frame contains a wax honeycomb.



The honeycomb is the substrate for brood cells, pollen, nectar and honey storage.



The hive too is used to separate the frames.



The brush is used to brush the bees off the extracted frame.



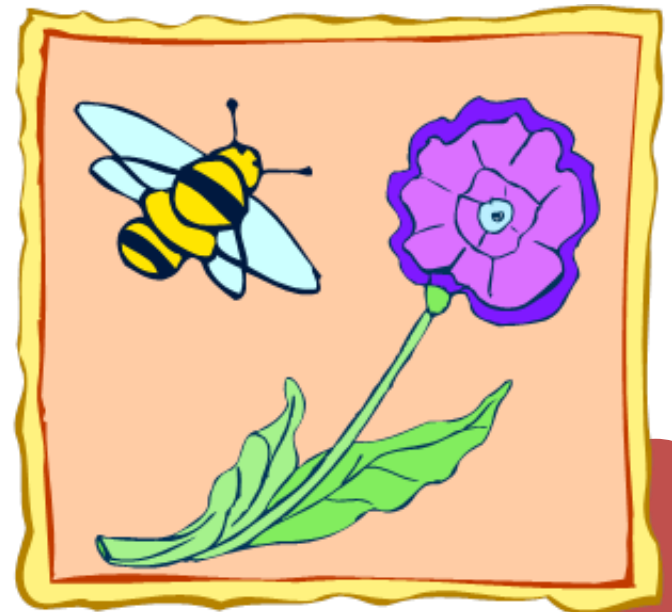
The smoker calms the bees so the frames can be handled safely. The smoke masks alarm pheromones.





# Move hand in circle.

- This bee flies round and round
- This bee flies round and round
- This bee flies round and round
- ZZZZ Z Z ZZ



# Pat the floor.

- This bee sits on the ground
- This bee sits on the ground
- This bee sits on the ground
- ZZZZ Z Z ZZ



# Give bee a kiss.

- This bee brings the honey home
- This bee brings the honey home
- This bee brings the honey home
- ZZZZ Z Z ZZ



Repeat with two hands  
for **ALL THE BEES**

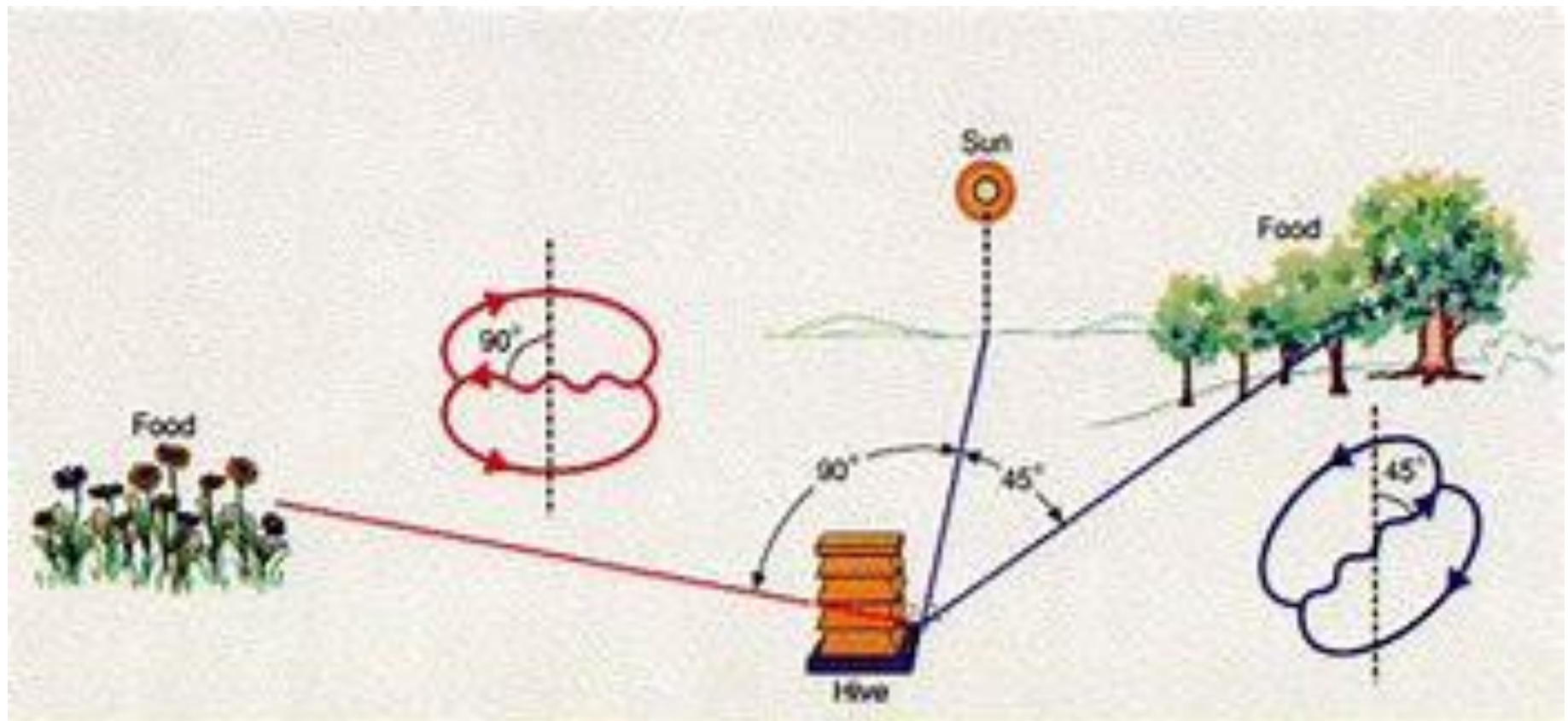
- All the bees fly round  
and round....
- All the bees sit on  
the ground.....
- All the bees bring  
the honey home.....

O



# You can do the waggle dance!

Dance in a figure 8 wagging as you cross and then waggle in the direction of the flowers. Waggle fast if it is close; the longer the waggle, the farther away, A lively dance means good quality food. The optic flow of the image while flying allows the bee to estimate distance.

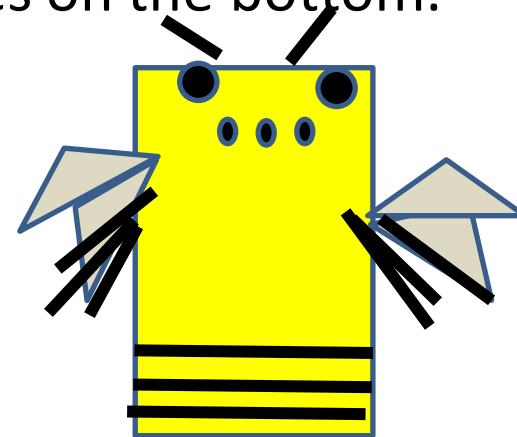


# You can make a paper roll bee house or a bee!





You can make a bee house with paper rolls. Take pages of a magazine or newspaper and roll them tightly around a pencil. Now tape it closed. Fill a container with the rolls. This will make a perfect house for a bee!



You can make a toilet roll bee. Take a cardboard roll and cover it with yellow paper or paint it yellow. Add 4 wings made of paper, coffee filter or ¼ paper plate to the middle. Draw 2 large eyes and 3 small eyes on the top and add 6 toothpick legs, 3 on each side in the middle, and 2 for antennae at the top. Draw black stripes on the bottom.



## Be a BEE designer! Engineer a bee!

- Add 2 big eyes 
- and 3 little eyes to head. Add 2 antennae. 
- Add 6 legs and 2 pair wings to thorax. 
- Color yellow and add black stripes to abdomen. 



## Be a BEE chef!

You can make a honeycomb with honeycomb cereal.



You can use a banana, pretzels and chocolate sauce too!



## Or a banana bee!

Take a banana chunk for the thorax and attach a grape for a head and a strawberry for the abdomen—you can use marshmallows for all three parts.



With black Wilton decorating gel draw stripes on the abdomen (end). You can use fruit leather for the stripes and wings.



Use gel to attach raisins for eyes on the head—

And 2 almonds for wings on the thorax—



Poke toothpicks or pretzel sticks in the head for 2 antennae, and 6 in the thorax (middle part) for 6 legs—



And YUMMMM!



# You can make a mini-book!

- Fold the paper in half
- Then in half again.

