

Bees 1

Family members

Each hive has three kinds of bee:

1. The queen bee

She is the biggest. There is only one queen in each nest.

2. The drones

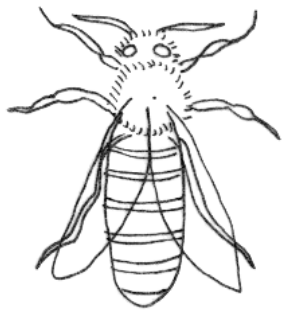
These are the males bees. They do no work at all. They are the next biggest.

3. The worker bees

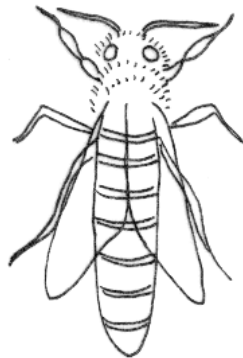
These are the smallest bees. They work very hard.

When people say, "*as busy as a bee*", they are talking about the worker bees who do so many jobs in the hive, including making the honey. Just like the ant community, the bee community is extremely well organized.

Draw and name the three types of bees in the hive.



Drone



Queen



Worker

Bees 2

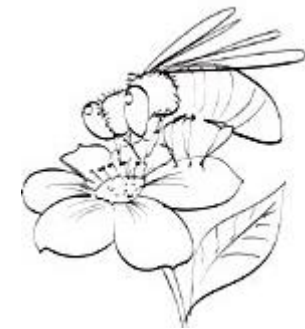
Bees help us

We can learn much from bees. We often say that a hard working person is a 'busy bee'. Bees work hard to serve the members of the hive. They get food for each other and look after the babies.

Bees are servant insects. God has not only designed the worker bees to serve the hive, but they also serve us by pollinating the flowers. That means that they take pollen from one flower to another so that our fruit trees bear fruit. Bees also make delicious honey.

How do bees help each other in the hive?

How do bees help us?



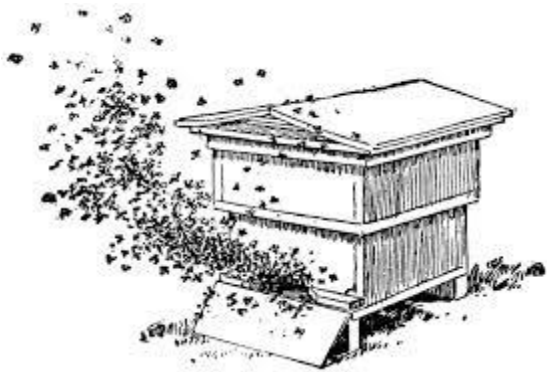
Bees 3

Bees work together and serve one another

In a bee community, everything runs in perfect order. Bees have no leader to tell them what to do. They just *know* what to do. God has given them instinct. This is a kind of wisdom which God gives to the animal kingdom. They just know the right thing to do and they do it.

God also gives people wisdom. We can find out the right thing to do from the Bible. However, not all people do the right thing! People can *choose* to be wise, or choose to be foolish.

1. Who do you know who is a hard worker?
2. Why is it good to be a hard worker?
3. God wants us to work to serve others. How can we work to serve God?
4. How does the worker bee teach us about serving?
5. How can we serve other people?

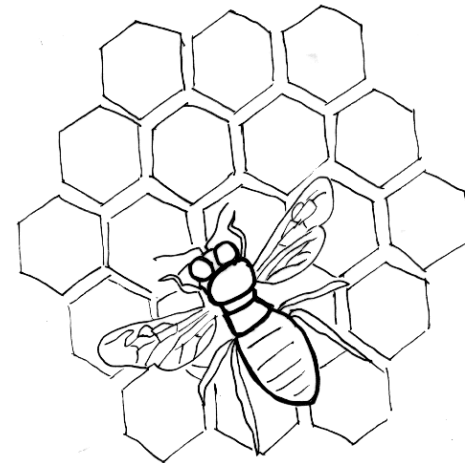


Bees 4

Jobs of the worker bees: Builders

The workers build six-sided wax cells. The six-sided cells, called hexagons, fit together like a jigsaw puzzle. The hexagon is stronger than any other shape. There are two layers of them. This is the honeycomb. The worker bees change the honey they eat into wax inside their body. They use the wax for building honeycomb. Many bees work together on one cell.

1. What is honeycomb made from?
2. How many layers are there?
3. What do worker bees eat?
4. What do they change the honey into?
5. What do they use the wax for?



Bees 5

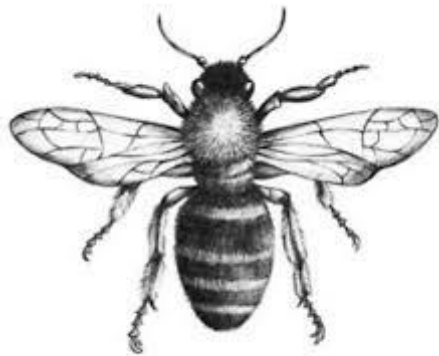
Jobs of the worker bees: Collecting pollen

If bees did not take collect pollen, then we would have no fruit. God designed the bees to take the pollen from the male part of the flower to the female part, so that seeds can form. Fruit forms around the seeds.

This is how the bees take the pollen from one part of the flower to another:

On the bee's body there are lots of tiny hairs. The pollen grains get caught in these. A bee's body can become covered in pollen. The bee scrapes the pollen from his body to his back legs, where there are special long hairs to hold the pollen. When he has enough pollen he returns to the hive.

1. Why do flowers need pollen?
2. What do the pollen grains get caught in?
3. Why does the bee scrape the pollen from his back legs to his front legs?
4. What does the bee do when he has enough pollen?



Bees 6

Jobs of the worker bees: Collecting nectar

In sunny weather, worker bees collect nectar from deep inside the flowers. They use their long tongue to sip the sweet thick liquid. When a bee finds nectar it does a special 'honey dance'. The bee sways her body from side to side. This sends out signals to other bees, so that they know where to come and find the nectar. Bees do not just care for themselves. They work together and help one another.

Honey bees only visit the flowers that are easy to get pollen from. Blossom is a good shape for the bee to sip nectar from. The colour and scent of the flower helps the bee to find the right one.

1. When do bees like to collect nectar?
2. What is nectar?
3. How does a bee let another bee know when it has found nectar?
4. How does a bee find the best flowers for nectar?



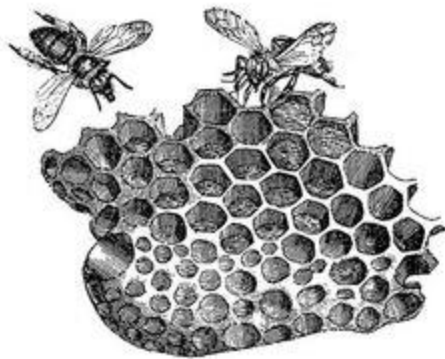
Bees 7

Jobs of the worker bees: Making honey

Bees carry the nectar back to the hive in a 'honey stomach'. While they are carrying the nectar, certain chemicals in their bodies start changing it into honey. Once they are back at the hive, they squeeze the nectar out of the honey stomach and pass it on to other worker bees. These bees pack it into the honeycomb. Honeycomb cells are six-sided (hexagons). When a cell is quite full, one of the workers closes it up with a little wax lid, keeping the honey air-tight.

The pollen is packed into other cells, and mixed with a little honey to make a kind of bread, which is used as food for the colony.

1. How do bees carry nectar back to the hive?
2. What happens to the nectar inside the bee's honey stomach?
3. What happens when the bee gets back to the hive?
4. Draw a honeycomb. Make sure the cells are six-sided.



Bees 8

Jobs of the worker bees

House Keepers

Some worker bees work at cleaning the hive. They crawl over the floor and carry out any dirt or dead bees in their jaws.

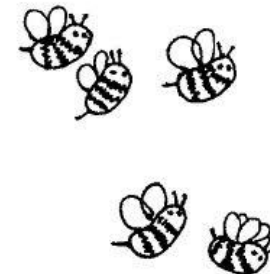
How do worker bees carry out the dirt and dead bees?

Nurses

The nurse bees look after the baby bees. The nurse bees feed the little grubs called *larvae*. They run around from cell to cell, making sure that each tiny larva is all right and that it has enough to eat.

For three days all the larvae live on *royal jelly*. Then the nurse bees feed most of them with nectar and pollen which they have collected from flowers. The pollen and nectar have been stored in the cells as *bee bread*. The queen bees are not given bee bread. They keep eating royal jelly so that they grow into queens.

1. What do the nurse bees do?
2. What is royal jelly?
3. What do larvae eat after three days?
4. What do queen bees eat all the time?



Bees 9

Jobs of the worker bees

Air Conditioners

Near the doorway of the hive stand bees that make a humming sound, but not because they are angry. They make the noise with their wings. They fan their wings very fast. This keeps the air moving and cools the hive in hot weather. It stops the honey from getting too soft and runny.

1. Why do some bees make a humming sound with their wings?
2. Why does honey need to be kept cool?

Armed Guards

The armed guards stand at the entrance of the bee hive. Bees have to pass the guards to get into the hive. The guards are armed with stings. They only let in the bees that belong to their hive. They know which ones belong because of their smell. They drive away any robber bees that may come from other colonies to steal honey.

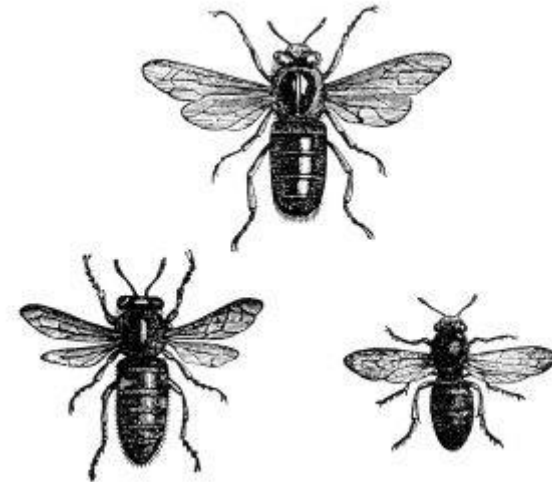
1. Where do the guards stand?
2. What is their weapon?
3. Who do the guards let into the hive?
4. Who do they keep away?

Bees 10

The Drones

The drones are very sleepy and do no work at all. They cannot gather nectar because their tongues are too short. They have no pollen baskets for gathering pollen and they have no stings. The drones are very noisy, and buzz a lot. The purpose of the drones is to mate with the new queen so that she can lay eggs. After the drones have mated with the queen, they are usually thrown out of the hive because they are useless, and only extra mouths to feed.

1. Why aren't the drones very useful?
2. Can drones sting?
3. What is the purpose of the drones in the hive?



Bees 11

The Queen Bee

The queen is the most important bee in the hive. The other bees honour her and give her full attention throughout her life. She is surrounded and protected. She becomes a queen because she is fed on a special food called royal jelly. This makes her longer, bigger and shinier than the other bees. She is fed by the worker bees, who also comb the fur on her body.

A queen starts laying eggs once she has mated with a drone. The queen lays her eggs in the wax cells. She lays two kinds of eggs. One kind of egg will grow into workers and the other kind will grow into drones.

1. What does the queen look like?
2. Who looks after the queen?
3. What special attention does she receive?
4. Where does the queen lay her eggs?
5. What are the two kinds of eggs that the queen lays?



Worker.



Queen



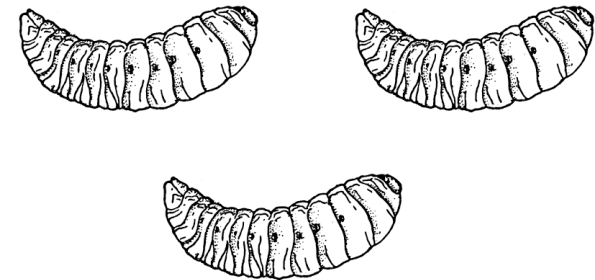
Drone.

Bees 12

The larvae

The eggs hatch into small white grubs. These are called *larvae*. The nurse bees feed them on pollen and honey. After five days, they have developed into tiny bees called *pupae*. They stay in the cells for another thirteen days. Then they bite their way out of cell, by biting through the wax which covers the cell.

1. What are the *larvae*?
2. Who looks after them?
3. What is the total amount of time they stay in the cell after hatching?
4. How do they get out of the cell?

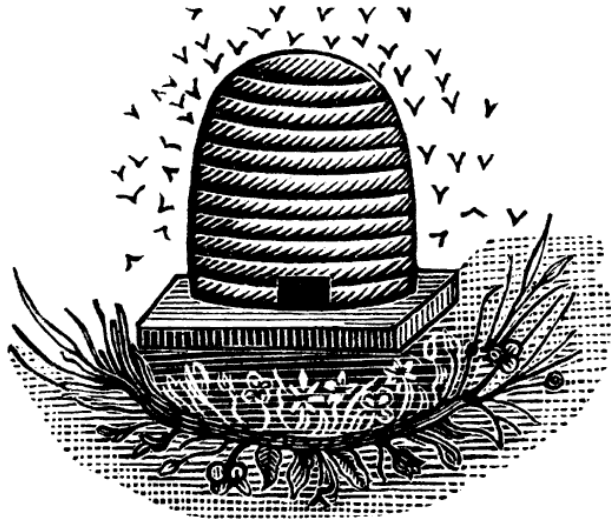


Bees 13

The swarm

When there are too many bees in the hive, the old queen leaves, taking many worker bees with her. Some of the worker bees scout for a new home. The swarm gathers together in a cluster on a branch before they move into their new home.

1. What happens when there are too many bees in a hive?
2. What does it mean to *scout* for a new home?
3. What does a *cluster* mean?

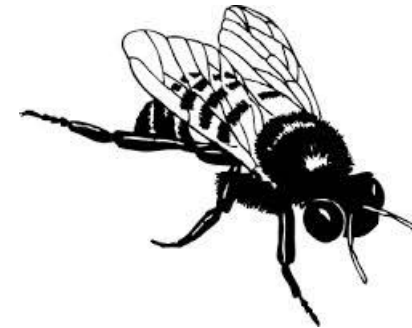


Bees 14

A bee's head

The head has five amazing eyes: two large ones and three small ones. As well as being able to see in all directions at once, she can see the earth and the sky at the same time. The eyes also let light through in an amazing way. Bees can see many different patterns of white, grey and black, and can actually *read* her way to flowers and back to the hive again. Because of her amazing eyes, the bee has a wonderful sense of direction.

The head also has feelers, to feel and smell. Bees also have a mouth with strong jaws for chewing and a long tongue for sipping nectar.



1. How many eyes does a bee have?
2. What is so amazing about the bee's eyes?

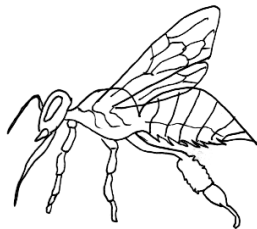
Bees 15

A bee's body

A bee is an insect. This means it has six legs. Its body is divided into three parts: the head, the thorax and the abdomen. Draw a bee and label the parts.

The thorax is the middle part of the body. It has four thin wings. There are two on each side and they can move four times a second. The tail part is the abdomen. This is the biggest part. It has a honey sac where it stores nectar.

Worker bees have stings on their tails. The sting has two spears which are joined to a red, egg-shaped bag which holds poison. Each spear has barbs on the end. These are like fish hooks. These make it very hard to pull out of the flesh. Sometimes the bee has to leave them there in order to get away. When she does this, she dies. Worker bees can usually get their stings out of other bees, but not out of a human being's skin.



1. To which part of the body are the four wings attached?
2. What is so amazing about the wings?
3. What is stored in the abdomen?
4. Which members of the bee family have stings?
5. What is the sting like? What happens if the bee loses her sting?

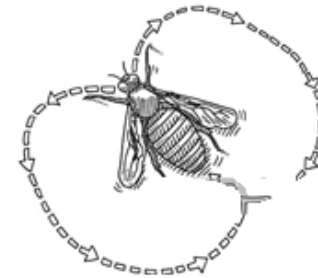
Bees 16

The dance of the bees

When a bee goes out looking for nectar it performs a "dance" which sends signals back to the other bees to come and get the food. They get electrical charges on their body while flying and can send out electric signals by their dance.

A bee can fly away from the hive for about 8 km and find its way back. But if they fly this far they get too tired to work. Usually they fly about 2 km (1.24 miles) from their hive looking for food.

Bees have favourite flowers for nectar: Their favourite colours are blue and yellow.



1. How does a bee tell other bees that they have found food?
2. What does this show us about God the Creator?
3. Write an amazing fact about a bee that is far away from home?
4. What colours do bees like?
5. Draw either a bee dance, or a bee on one of its favourite flowers.