

PS2 - Biology ELG - 3 - 5



What is the main task of this puzzle?

Guide the honey bee through the flower maze to the centre of the flower.

Bees carry pollen from plant to plant. They dip into the centre of the flower to eat the flower's nectar and collect pollen to eat too, and when they do this they get covered in the powdery pollen and carry it to the next flower they visit. When pollen from one flower reaches another flower the plant can make seeds. Seeds are frequently found inside edible fruit. Honey bees are incredibly important to farmers and gardeners as they help to grow apples, oranges, cucumbers, strawberries and many other fruit and vegetables. The flower in the puzzle looks like a sunflower. Sunflowers are pollinated by honey bees and the seeds can be eaten or made into oil.

Lots of other animals can pollinate flowers too, not just bees. Butterflies, moths, flies and some birds all help pollination. Even bats, who like to eat the plant nectar, help to move pollen around.

Sometimes you don't even need animals. Many grasses use the wind to blow the pollen into the air, giving it a chance to land on another glass flower. The pollen in the air is what triggers people's hay fever.

More advanced...

Bees follow mazes in real life. Many flowers have lines or bright spots on their petals which guide the bees to the centre of the flower where they find the nectar and pollen they are looking for. Honey bees can see in colour, they see orange, yellow, green, blue and they even see some ultraviolet light which we can't see, but bees cannot see red. Red flowers would look grey or black to a bee and they usually do not attract bees. Some flowers which look all one colour, or even have black flowers, actually have secret UV markings which bees can see and which guide the bee to the centre.

What are the other topics or tasks in the puzzle?

- Find these parts of the plant - leaves, petals, roots and stem.
There are four flower pots at the bottom of the picture, what order do they come in? Which one has a seed in it but no plant yet, which is the seedling? What happens to the flower petals after the plant has finished flowering?
In the picture you can also see the sun, a rain cloud, a snow flake, and bird and a kite, blowing in the wind. Which of these does a plant need to grow?
A plant needs both the sun and rain as it needs light and water to make its own food. Some plants are pollinated by birds (such as those with red flowers) and birds also help disperse seeds. Although this means that birds help with a plant's lifecycle they aren't absolutely necessary for it to survive. Wind is another mechanism for seed dispersal, but the plant itself can live without wind. In some cases feeding birds or strong wind can be destructive.
- What has happened to the flower's leaf? Has something in the picture been eating it?
Most caterpillars only eat plants. Some plants create toxins to try and prevent the damage caused by caterpillars. Once a caterpillar turns into a butterfly the butterfly only drinks liquids, mainly nectar and butterflies are very good pollinators. This means that flowering plants want to both encourage and discourage caterpillars and butterflies.
- Colour in the picture.
Colour in the sunflower as it looks to a human or colour in the sunflower as it might look to a bee. You can see what a sunflower looks like just in ultra violet light here: <http://www.uvcorder.com/applications/7.html>
Don't forget the bees see yellow too!

Where does it fit in the curriculum?

England

Look closely at similarities, differences, patterns and change.
Observe, find out about and identify features in the place they live and the natural world.

Wales

Begin to understand the idea of time.
Begin to understand about food and where it comes from.

Scotland

Be aware of change and its effects on them, for example their own growth, changes in weather, trees, flowers.

Northern Ireland

Understand that some things change over time.

Further information and links.

Bees:

Facts about Bees on the BBC: <http://www.bbc.co.uk/nature/wildfacts/factfiles/425.shtml>

All about honey on the British Beekeepers association webpage: <http://www.bbka.org.uk/faq3.php>

How do bees make honey? <http://science.howstuffworks.com/question300.htm>

For more information on how bees see the world look here: <http://gears.tucson.ars.ag.gov/ic/vision/bee-vision.html>

Butterflies:

Butterfly Conservation. Information on butterflies and their habitat: <http://www.butterfly-conservation.org/index.php>

Information on the butterflies found at the London Butterfly House: <http://www.londonbutterflyhouse.com/>

Some information on UK moths in Back Garden Moths: <http://www.back-garden-moths.co.uk/>

Facts about dragonflies from the Young Peoples Trust for the Environment: http://www.yptenc.org.uk/docs/factsheets/animal_facts/dragon_flies.html

Flowers:

Loads from the BBC on Sunflowers: http://www.bbc.co.uk/gardening/plants/plantprofile_sunflower.shtml

How to grow sunflowers: <http://www.flower-gardening-made-easy.com/growing-sunflowers.html>

Have a look at Planet Science's section on black flowers: <http://www.planet-science.com/outthere/flowers/nature.html>

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