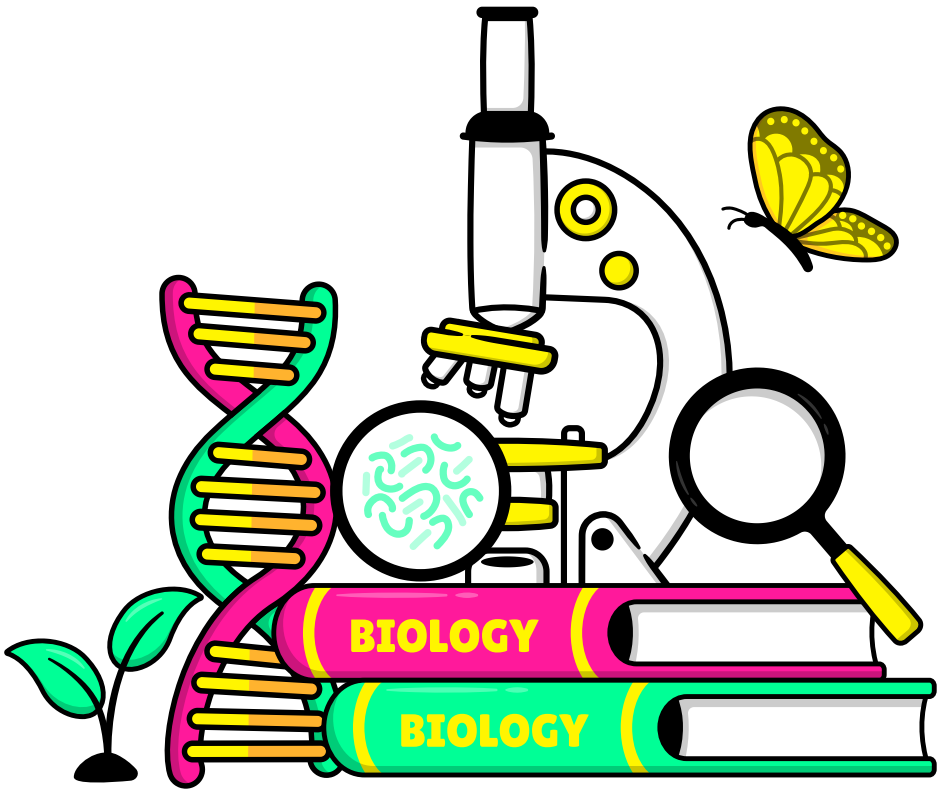


**S E B**



**ACTIVITY BOOK**

**THIS BOOK  
BELONGS TO**



# WHO IS SEB?

The Society for Experimental Biology or SEB is a “Learned Society”. This is like a big club for scientists who love to explore the secrets of life and discover the wonders of the natural world. But what exactly is a Learned Society? Imagine it as a group of friends who are really curious about how things work in nature. They meet up, share their cool discoveries, and help each other learn more about the world around us.

Our story began way back in 1923 when a group of science enthusiasts gathered at Birkbeck College in London. They were eager to uncover the secrets of life through experiments and discoveries. Nowadays, SEB is like a family of scientists from all over the world. These scientists study everything from the tiniest cells to the mightiest animals and plants using fancy tools and experiments to uncover the secrets of life.

One of the coolest things about SEB is that we love making connections. Just like how friends introduce each other to new games or books, SEB scientists introduce each other to new ideas and discoveries. We believe that by working together and sharing our knowledge, we can solve big problems like climate change, food shortages, and helping animals survive.

At SEB, we're all about thinking outside the box. We encourage our scientists to come up with wild ideas and try out new ways of doing things. Sometimes, it's those crazy ideas that lead to amazing breakthroughs!

But SEB isn't just for grown-up scientists. We also love to help young biologists like you learn and grow. This book is your first step on the way to becoming a junior scientist extraordinaire!

# WHAT IS IN THIS BOOK?

This fun activity book is for budding scientists who want to learn more about the fascinating world of biology. You'll discover the wonders of nature, from the tiny insects buzzing around to the intricate structures of plant cells. Are you ready to dive in and uncover the secrets of the living world? Let's get started!

In this book you'll find:

## 1. Colouring Fun: Labelled Insect Picture

- Grab your favourite crayons and bring this insect to life! Colour in the picture while learning about its different body parts.
- Insect Counting Game - How many insects can you count? Test your observation skills as you count each type of insect hiding in the picture.

## 2. Label the Parts of a Plant

- It's time to learn about plants! Use your knowledge to label the different parts of a plant. From the roots to the leaves, every part plays a crucial role in a plant's life.

## 3. Discover Thermal Imaging

- Learn about thermal imaging and how we can use special cameras and heat energy to find animals even in the dark. Can you match the thermal image to the corresponding animal photo?

## 4. All About Plant Cells

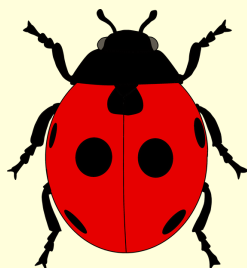
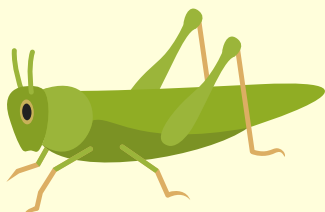
- Dive into the microscopic world of plant cells. Explore the different parts of a plant cell and learn about their functions. Put your detective skills to the test and spot the differences between two plant cells like a pro.

Are you ready to explore? Let's go!



# AMAZING INSECTS

Insects are small animals that have six legs and three main body parts: the head, thorax, and abdomen. They are part of a group called arthropods, which means they have hard outer skeletons (exoskeletons) and jointed legs.

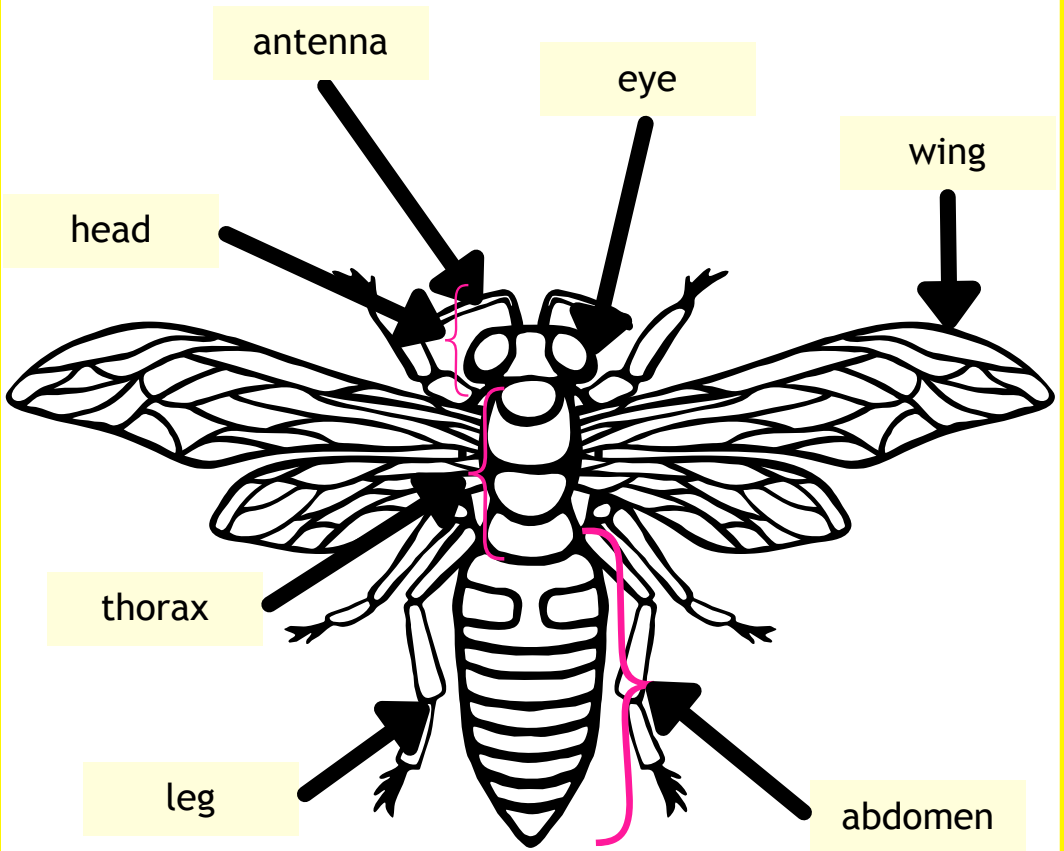


There are over a million species of insects known to scientists, and they come in all shapes, sizes, and colours. Some common examples include butterflies, bees, ants, beetles, and grasshoppers.

Insects play many important roles. They pollinate flowers, which helps plants to reproduce, and they also serve as food for many animals, including birds, frogs, and fish. In addition, insects help break down dead plants and animals, which helps recycle nutrients in the environment.

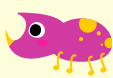
# COLOURING IN

Colour in this insect and learn all about its different body parts.



# LET'S COUNT INSECTS!

Use your observation skills to count each type of insect in the garden. Write your answers in the boxes below



# PARTS OF A PLANT

Every part of a plant plays a crucial role. Roots anchor the plant in the soil, and helps it draw up water and nutrients to nourish the plant. The stem provides support and structure, functioning as a highway for water and nutrients to travel from the roots to the leaves and other parts of the plant. Stems vary in size and shape, from sturdy trunks of giant trees to delicate vines. Leaves serve as solar panels, converting sunlight into energy through photosynthesis. They can capture sunlight to produce food for the plant and release oxygen into the air. Flowers are the reproductive organs, they attract pollinators like bees and butterflies. Inside the flower, male and female parts collaborate to produce seeds for new plants. Fruits develop from flowers and come in many forms, from juicy berries to crunchy apples. They play a vital role in seed dispersal. Animals eat the fruits and poo out the seeds spreading them far and wide, helping plants reproduce and grow in new places. Seeds are like tiny treasure chests, packed with nutrients and protected by a hard coat. When conditions are right, seeds germinate, sending out roots and shoots to begin their journey as new plants.



# LABEL THE PLANT

Choose from the options below and write the name of each part of the plant in the right box.

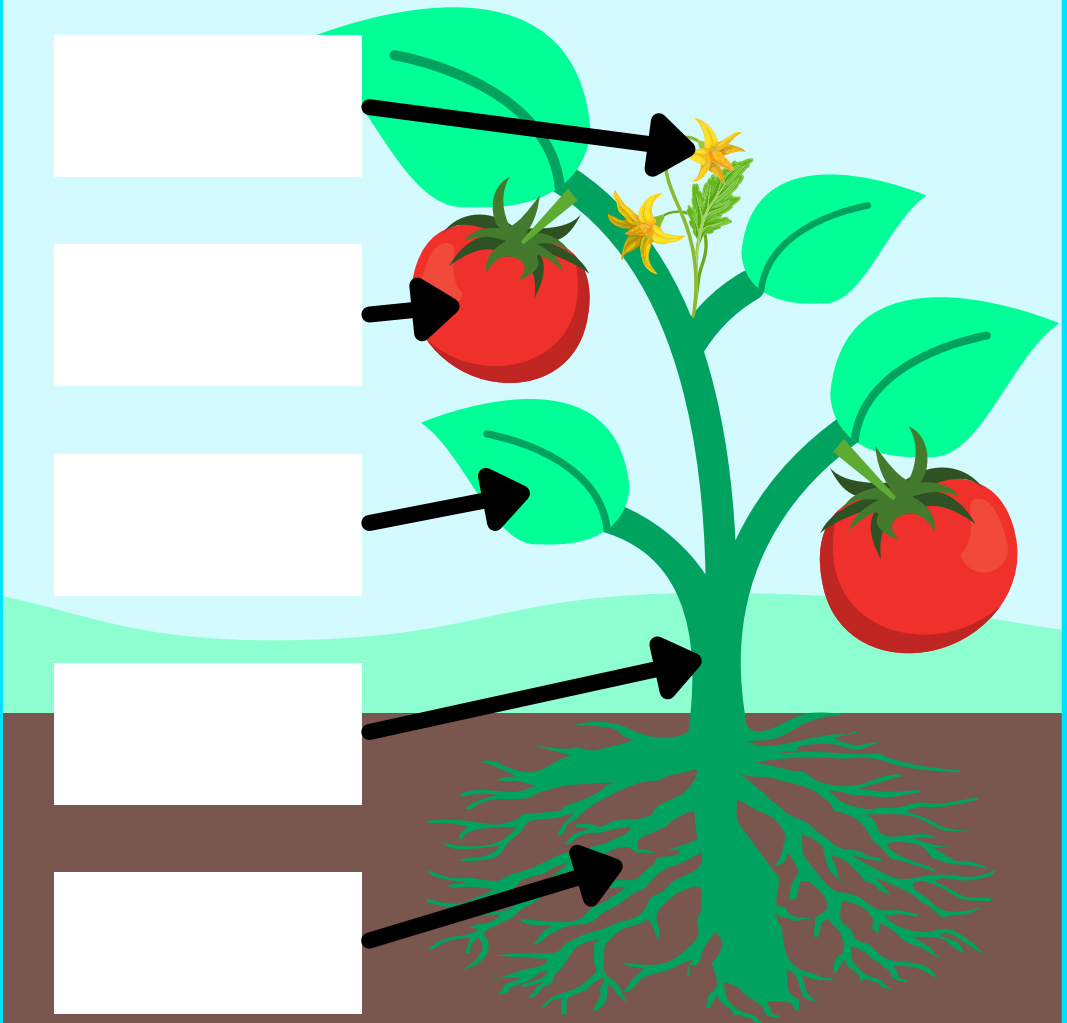
leaf

root

fruit

stem

flower



# WHAT IS THERMAL IMAGING?

Everything around us gives off a special kind of invisible energy that we call heat, but scientists call infrared radiation. This energy comes from how hot or cold things are. When something is really hot, like the sun on a hot day, a hot cup of tea, or a radiator, it gives off a lot of this infrared energy. A cold object like ice-cream, snow, or frozen peas don't give off very much of this energy.

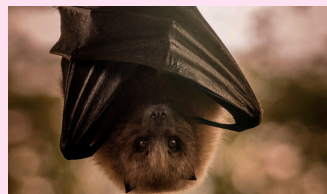
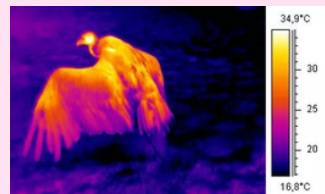
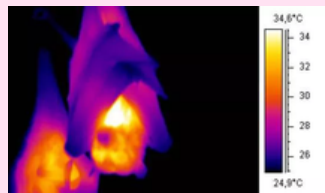
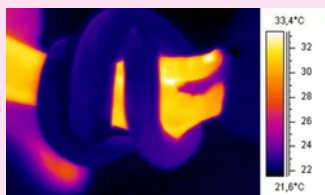
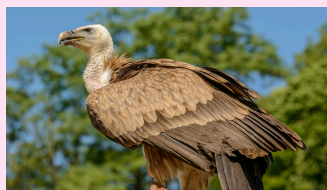
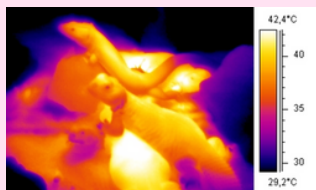
A thermal imaging camera looks a lot like a normal camera but instead of taking a regular photograph, it can help us see how hot or cold everything is. It collects the infrared radiation (the heat energy) from objects and then turns that into a picture.



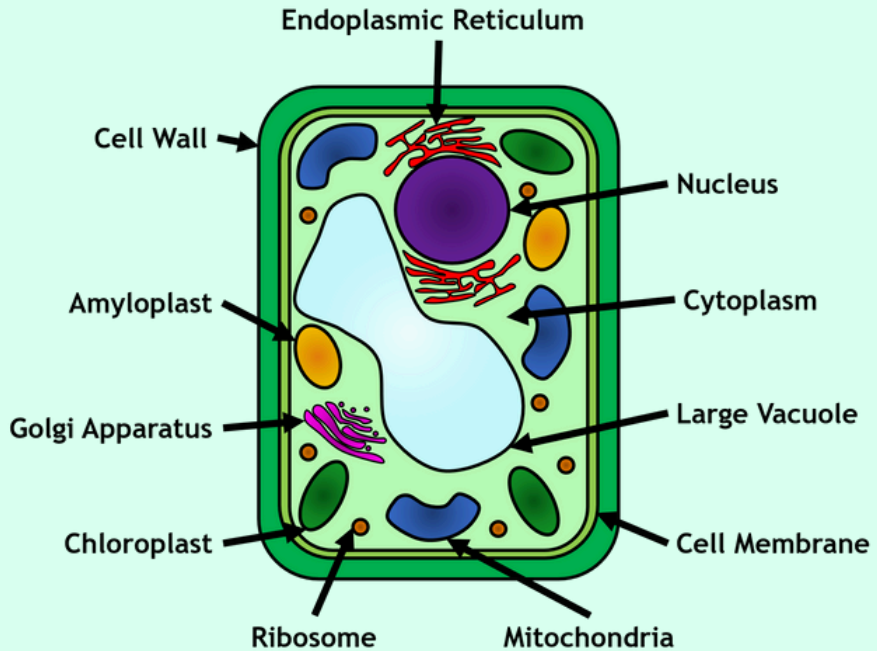
That's why with this special camera, we can find things even when they are behind something else, or in the dark or because it doesn't need light like our eyes do. It helps scientists find animals in forests or at night when they're hiding.

Biologists use thermal imaging cameras to study animals in their natural habitats. They can track the movements of nocturnal animals, such as bats and owls, without disturbing them. By observing heat signatures, biologists can gather valuable data on animal behaviour, where they live, and their feeding patterns.

Can you match the animal with its thermal imaging picture?  
 Draw a line connecting the answers and check at the back  
 of the book if you were right!



# PARTS OF A PLANT CELL



What do all these parts of a plant cell do?

The Cell Wall is a strong, protective structure that surrounds the plant cell. It provides protection for plant cells and helps them to hold their shape.

The Cell Membrane is a thin flexible layer that helps to separate the inside of the cell from the outside. It also helps to regulate what come into the cell and what goes out.

The Cytoplasm is a watery gel-like substance found inside the cell. It provides structure for the cell and helps all the other parts of the cell move around.



The Nucleus stores the cell's genetic information in the form of deoxyribonucleic acid or DNA. DNA holds the instructions for how the cell should work.

Ribosomes use the instructions stored in DNA to make proteins. Proteins are large molecules found in all cells and carry out many important functions. For example, they help the cell wall keep its structure.

The Golgi Apparatus acts as the packing and distribution center of the cell. It takes in protein, modifies it, and then places it in transport vessels called vesicles that can ship the proteins to other parts of the cell or plant. The Golgi apparatus also makes lysosomes which help to clean up waste in the cell.

The Endoplasmic Reticulum works closely with the nucleus, ribosomes and Golgi Apparatus to make, package, and transport proteins and fats.

Chloroplasts carry out the process of photosynthesis. This is when water, carbon dioxide, and light energy are turned into food for the plant.

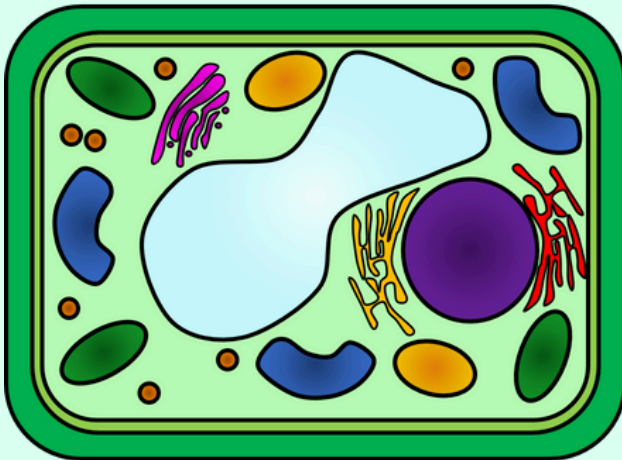
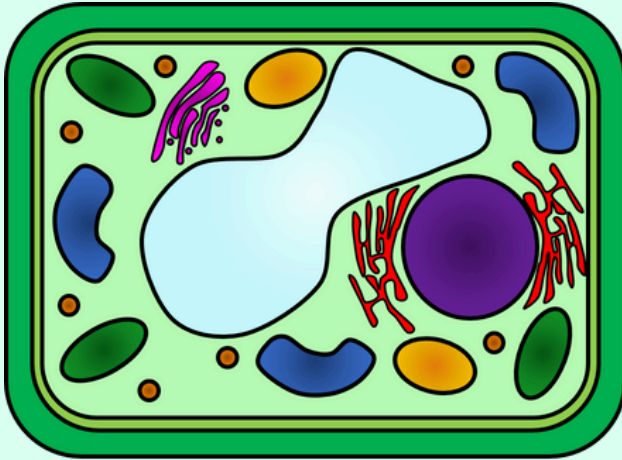
Amyloplasts help to make and store starch from any extra food the chloroplasts make. This means they have a store of energy ready for when they need it.

Large Vacuole helps to store food and water for the cell, as well as getting rid of waste and helping the cell grow. As it is so big, it also helps the cell to hold its shape.

Mitochondria are often called the “powerhouse” of the cell. They take larger molecules like sugar, starch, and fat, and break them down to produce energy for the cells.









# SPOT THE DIFFERENCE

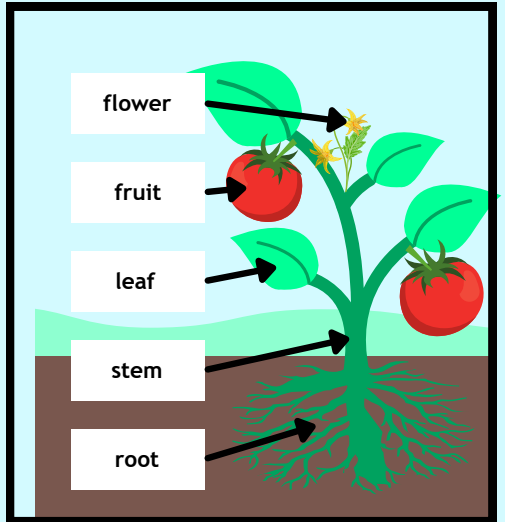
Below are two pictures of a plant cell. Can you spot the 5 differences? Circle your answers and check at the back of the book if you are right.



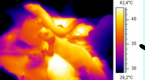

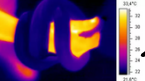



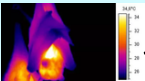

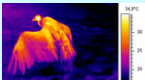



# ANSWERS

Here are all the answers. Did you get them right?

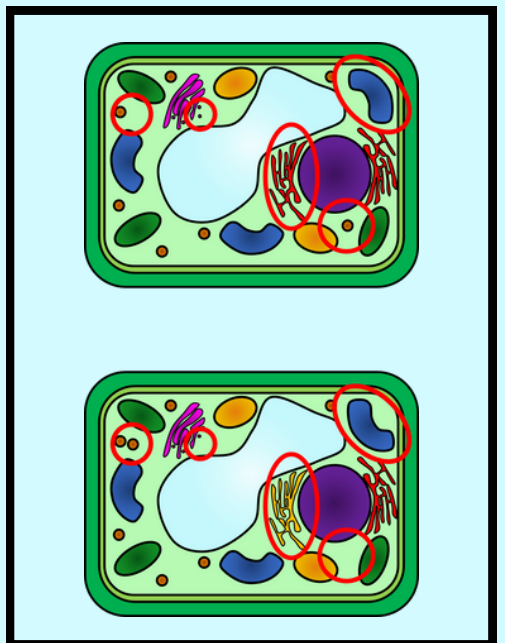
	4		6
	7		5
	12		8
	3		7



1. 	A. 
2. 	B. 
3. 	C. 
4. 	D. 
5. 	E. 
6. 	F. 

Connections between thermal images and animals:

- 1 (Bear) connects to C (Polar bear)
- 2 (Bird) connects to B (Ostrich)
- 3 (Polar bear) connects to C (Polar bear)
- 4 (Dog) connects to F (Dog)
- 5 (Lion) connects to E (Lion)
- 6 (Dog) connects to F (Dog)



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