

# OUT AND ABOUT

## OUTDOOR ACTIVITIES FOR KEY STAGE 2 MATHEMATICS

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### SHAPE AND SPACE

## What Lives Here?

Adapted from [National Geographic Bioblitz activities](#)

### Learning focus

- Follow the data problem solving cycle to investigate a problem of interest
- Observe living things within a given area and record using tally charts and tables.
- Aggregate data to develop a fuller picture
- Tabulate data and select appropriate charts to display data

### Key vocabulary

- Tally chart
- Table
- Pie Chart
- Bar Chart

### Resources

- Pencils, paper and clipboards
- (Hoops)
- (Tablets )
- (Camera)



### Activity

Pose the question 'What lives here?'. Explain that that the class will be looking closely at areas within the outdoor environment of the school, and the focus is on identifying what living things are in our surroundings. Ask for children's predictions about what they may find.

*What types of plants, insects, animals, birds might we find?*

*Do you expect to find different things in different parts of the school? Why?*

Each child can then be directed to find an area that interests them. This should be about the size of a large hoop, and can be marked with a hoop if available. They should take 2 minutes to **stand** in that location and observe what they notice. This observation can be structured by providing prompt questions in advance or by providing the 'Adopt-a-spot' worksheet from National Geographic (linked above).

*What do you see and hear?*

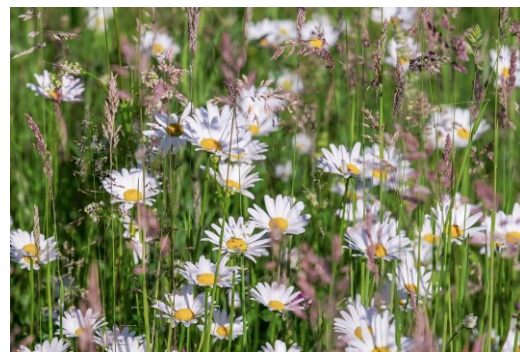
*What do you smell and feel?*

On clipboards, the children can describe their spot or draw pictures.

Then the children can be directed to **sit** or kneel in their location and to observe more closely, for example, by looking under leaves or rocks. They should list and try to tally all the living things that they observe. How they do this may depend on the prior knowledge of the class. For example, some children may list and count flowers by name, e.g., daisy, dandelion, while others may just count flowers. If possible, the children can also take photographs.

After 5- 10 minutes, gather the children together again to share their observations.

*What did you notice?  
Did the observations differ from place to place?  
Why do you think this could be?  
How could we combine our observations of each of these spots to build a fuller picture of this area?*



Prompt the children to consider ways to make more structured observations of their chosen location. Note, it may be possible to use digital applications such as iNaturalist or Google lens to help with identification of what was found at each location. In this way, suitable headings and categories for a tally chart can be created. It is not expected that the children (or teacher) will be able to identify everything that is observed, and it may be sensible to include the category 'other'.

## Teaching point

Data investigations can be structured using the data problem solving cycle: Problem, Plan, Data, Analysis and Conclusion.

This lesson began with the broad question: what lives here? As children move through the initial exploratory activities, they may begin to focus on questions that are of interest to them. For example, they may begin to focus on more fine-grained questions, such as, *which areas are most suitable for insects? Which birds are visible from our school?*

When questions are decided, the plan for data collection can be agreed. This might involve creating data collection tools, such as a structured tally chart, and agreeing how to approach data collection. Regardless of which question the children focus on, they should follow the steps of the data-problem solving cycle.

**Data Collection.** The children can then return to their spots with the agreed tally-chart and make further observations. Encourage them to predict what they will find before gathering data and to aim for accurate recording.

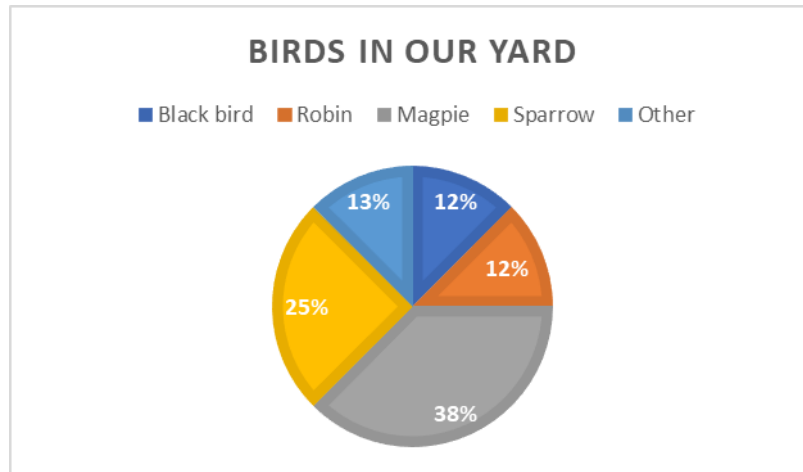
*Were your observations in line with what you expected? Why/Why not?*

**Data Analysis.** The children's data can be collected and shared in digital form. Tally-chart data can be collated on a digital spreadsheet. Children can be encouraged to think about which types of charts might best show this data. Digital tools can be used to switch between data representations. Encourage children to discuss the affordances and constraints of each.

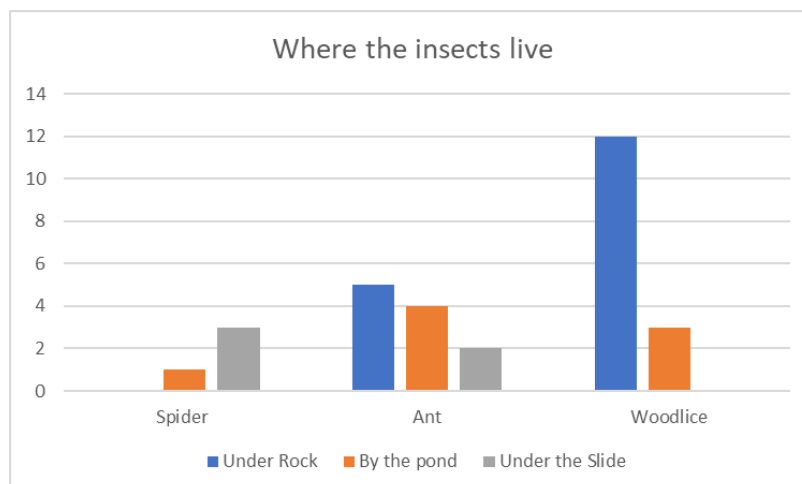
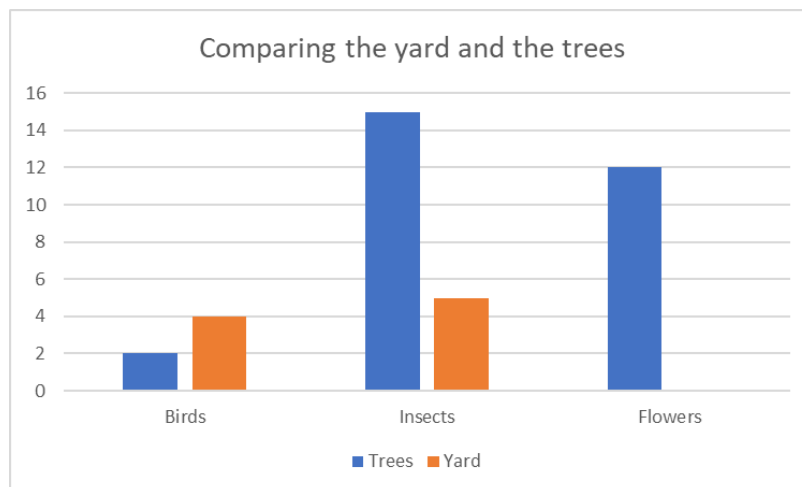
*Why did you choose this type of chart?  
Is a line graph suitable for this data? Why/Why not?  
What do you notice about this data? What do you wonder? Are there other questions that you would like to investigate?*

## Teaching point

Selecting appropriate representations is an important part of data analysis and communication. Pie charts are useful for summarizing data in a visual way. They display relative proportions and are useful for analysing and displaying part-to-whole relationships. For example, if all the data relating to bird sightings were displayed on a pie chart, it would be easy to see the proportion of magpies compared to the total number of birds. Pie charts are less useful when there are many different categories to display.



Bar charts are a common way of displaying data. Multiple bars can be used to show multiple data points for each category.



**Conclusion.** The children should write some sentences to explain what each chart shows, and how this relates to their original question(s). The charts and written explanations should be displayed for others to see. The children may also present their findings to their peers or another audience, such as a different class within the school.

## Taking ideas further

It is likely that children's engagement in this activity may prompt further questions for investigation.

This activity could be extended into a whole school or community bioblitz activity, where members of the community work together to find and identify as many plants, animals, and other organisms as possible in a short period of time. For more details, see the National Geographic information linked above.

## Assessment opportunities

Are the children able to:

- Devise an appropriate plan to collect data
- Select an appropriate chart for data display
- Interpret data by making statements and generating further questions