

The logo for Purple Mash, featuring the word "purple" in a purple font and "mash" in a white font, both on a black background that resembles a torn piece of paper.

**purple  
mash**

# **Computing Scheme of Work**

## **Unit 3.6 - Branching Databases**



# Contents

Introduction .....	3
Year 3 - Medium-term Plan.....	3
Lesson 1 .....	4
Aims .....	4
Success criteria .....	4
Resources .....	4
Activities .....	4
Lesson 2 .....	7
Aims .....	7
Success criteria .....	7
Resources .....	7
Activities .....	7
Lessons 3 and 4.....	10
Aim .....	10
Success criteria .....	10
Resources .....	10
Activities .....	10
Assessment Guidance .....	18

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# Introduction

- A branching database is sometimes referred to as a 'binary tree' or a 'key'.
- Branching databases classify groups of objects.
- If you have created your branching database correctly, someone else should be able to use it to identify an object that they have in front of them, e.g. to find out the name of an insect, a fruit or vegetable by using a series of simple questions and yes/no answers.

## Year 3 - Medium-term Plan

Lesson	Aims	Success Criteria
<a href="#">1</a>	To sort objects using just 'yes' or 'no' questions.	<ul style="list-style-type: none"> <li>• Pupils understand how YES/NO questions are structured and answered.</li> <li>• Pupils have used YES/NO questioning to play a simple game with a friend.</li> <li>• Extension: Pupils can explain why they choose a particular question to split their database.</li> <li>• Extension: Pupils can begin to use 'or more' and 'or less' in their questioning</li> </ul>
<a href="#">2</a>	To complete a branching database using 2Question.	<ul style="list-style-type: none"> <li>• Pupils have contributed to a class branching database about fruit.</li> <li>• Pupils have completed a branching database about vegetables.</li> <li>• Extension: Pupils can edit and adapt a branching database to accommodate new entries.</li> </ul>
<a href="#">3 and 4</a>	To create a branching database of the pupils' choice.	<ul style="list-style-type: none"> <li>• Pupils can choose a suitable topic for a branching database.</li> <li>• Pupils can select and save appropriate images.</li> <li>• Pupils can create a branching database.</li> <li>• Pupils know how to use and debug their own and others branching databases.</li> </ul>

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# Lesson 1

## Aims

- To sort objects using just YES/NO questions.

## Success criteria

- Pupils understand how YES/NO questions are structured and answered.
- Pupils have used YES/NO questioning to play a simple game with a friend.
- Extension: Pupils can explain why they choose a particular question to split their database.
- Extension: Pupils can begin to use 'or more' and 'or less' in their questioning.

## Resources

Unless otherwise stated, all resources can be found on the [main unit 3.6 page](#). From here, click on the icon to set a resource as a 2do for your class. Use the links below to preview the resources; right-click on the link and 'open in new tab' so you do not lose this page.

- Images of fruit in [Appendix 1](#). The images can be printed for use with the class, or use the online file [Classifying Fruit](#) to display and move the pictures of fruit on the whiteboard.
- Images of musical instruments [Appendix 2](#). You will need to print copies of these for pupils to play with unless you have similar resources, e.g. minibeast pictures, alien/monster pictures, country flags or animals that pupils could use instead.
- Images of vegetables [Appendix 3](#). You will need to print copies of these for pupils to play with unless you have similar resources, e.g. minibeast pictures, alien/monster pictures, country flags or animals that pupils could use instead.

## Activities

1. Share the learning objectives and success criteria with the pupils.
2. Ask the pupils if they know what a database is.
3. Briefly discuss the following:

**Data** are facts about something; data can be words or numbers or pictures. For example, the class register contains data about the names, addresses and attendance of the pupils in the class. Some registers will also contain photos of the students.

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**A database** is a collection of data organised in such a way that it can be searched, and information found easily. Database usually refers to data stored on computers. The school attendance database has all the data from the registers. The school staff can easily do a search of the database using the computer to find out who has 100% attendance and who has missed lots of school. People use databases every time they search the Internet to find specific information; for example, searching for a holiday destination that is the right temperature and has the things they like, such as a swimming pool and beach nearby.

4. Can pupils make any sensible guesses as to what is meant by a **branching** database? You will probably have to give a hint -- think of trees.

**A branching database** is used to classify groups of objects. It is used to help identify the objects by answering questions with either 'yes' or 'no'. Branching databases can also be called binary trees. They are called branching because each time a question is asked there can be two answers, making two branches. When you put all the questions and answers together in the database, it forms the shape of a tree (upside down).

5. Use the fruit images, either printed or by displaying [Classifying Fruit](#) on the whiteboard, to play a game to classify the images using YES/NO questions. You can move the images as the pupils classify them.
- Put the images face up on the desk and choose a fruit (but do not tell the class and leave the card in place).
  - Tell the pupils you are going to have some fruit for lunch; can they guess which fruit you have chosen?
  - They can ask you one question at a time about the fruit you have chosen, but you are only allowed to answer 'yes' or 'no'.
  - The pupils need to think of questions to separate the objects. Questions may include:
    - Is your fruit orange? (Eliminates the orange straightaway!)
    - Is your fruit long? (That takes care of the banana!)
    - Do you usually eat the skin on the fruit? (The lemon is out!)
    - Is your fruit usually bought in a bunch? (Possibly the grapes!)
6. Play again, but this time ask the pupils to think of a question that will separate the fruit into two equal groups if possible (groups with uneven numbers cannot be split exactly in half). Can anyone suggest why this is better?
7. Ask pupils if they have played the game 'Guess Who?' In this game, there are lots more items (people) to sort through, and if you ask questions that split the people into two equal groups you will get to the solution quicker (unless you are lucky in the question that you ask). This is quite a difficult concept to understand without playing these types of

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games a lot. Pupils will gain more understanding of this in the next two lessons when they make their databases.

8. Now let the pupils play a similar game themselves. They could use the pictures of the musical instruments or the vegetables.

### **Extension:**

Pupils should explain **why** they choose a particular question for the objects in their 'database', i.e. for Instruments it might be 'Do you blow it?' (this will split the stringed / percussion and woodwind / brass instruments). Some pupils may be ready to use 'or more' or 'or less' questions in a database.

How might they initially split a database using the phrase 'or more' in a database of...

- vehicles: i.e. Does it have 4 or more wheels?
- animals: i.e. Does it have 2 or more legs?

Why might a question like 'does it have four or more wheels' be better than 'does it have four wheels'?

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# Lesson 2

## Aims

- To complete a branching database using 2Question.

## Success criteria

- Pupils have contributed to a class branching database about fruit.
- Pupils have completed a branching database about vegetables.
- Pupils can edit and adapt a branching database to accommodate new entries.

## Resources

Unless otherwise stated, all resources can be found on the [main unit 3.6 page](#). From here, click on the icon to set a resource as a 2do for your class. Use the links below to preview the resources; right-click on the link and 'open in new tab' so you do not lose this page.

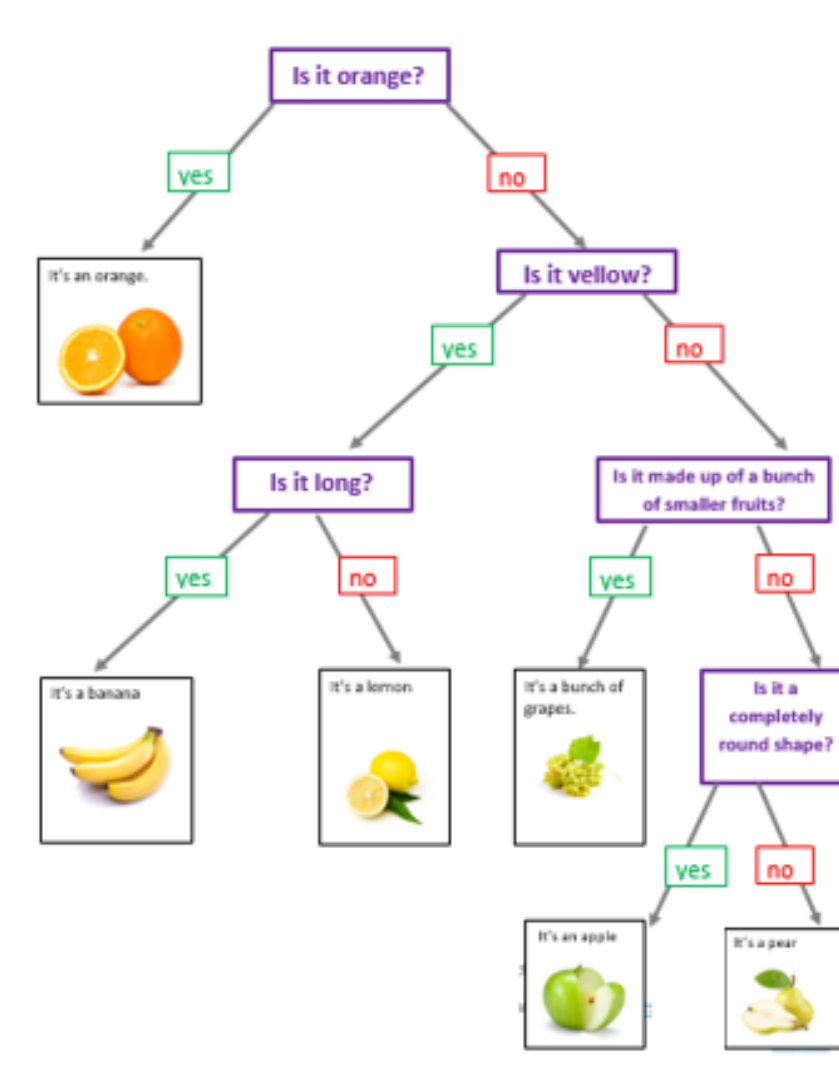
- Example 2Question Databases [Fruits Database](#) and [Vegetables - Incomplete](#). Set the [Vegetables - Incomplete](#) as a 2Do for the class.
- Images of fruit used last week.
- Blu-Tack.
- Yes/No Boxes, Arrows and Blank Questions from [Appendix 4](#) or printed from the same resources area as the example databases. The pictures will be used to make a branching-database model on the whiteboard which will then be recreated on the computer.

## Activities

1. Share the learning objectives and success criteria with the pupils. Recap the learning from the last lesson.
2. We are going to use the images of the fruit to create a branching database on the board.
3. Use the six fruit images. Use the blank boxes to write your questions (or write them directly onto a wipeable whiteboard if you have this available).
4. Use Blu-Tack to stick on the 'yes'/'no' cards and arrows to display the database as it develops. Alternatively, write on the whiteboard and use the Blu-Tack just for the fruit objects.

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5. Remind pupils of the need to start with a question that will split the fruit into two groups. Continue doing this until the branching database is complete. A completed example is shown below.
6. Explain to the class that we are going to use the data from our paper branching database in a computer version. Show pupils the example fruit database. Click on the 'Play' button at the top and use the database to identify a fruit. You could also try using it to identify a fruit that is not in the database; only fruits that are in the database can be identified correctly.
7. Show pupils how to open 2Question and create a new branching database.
8. (If you require assistance in using the program, click on the video Help files at the top-right of 2Question.)
9. Show the pupils how to add questions and images (fruit can be found in the Food section of the clipart gallery) to create the database.

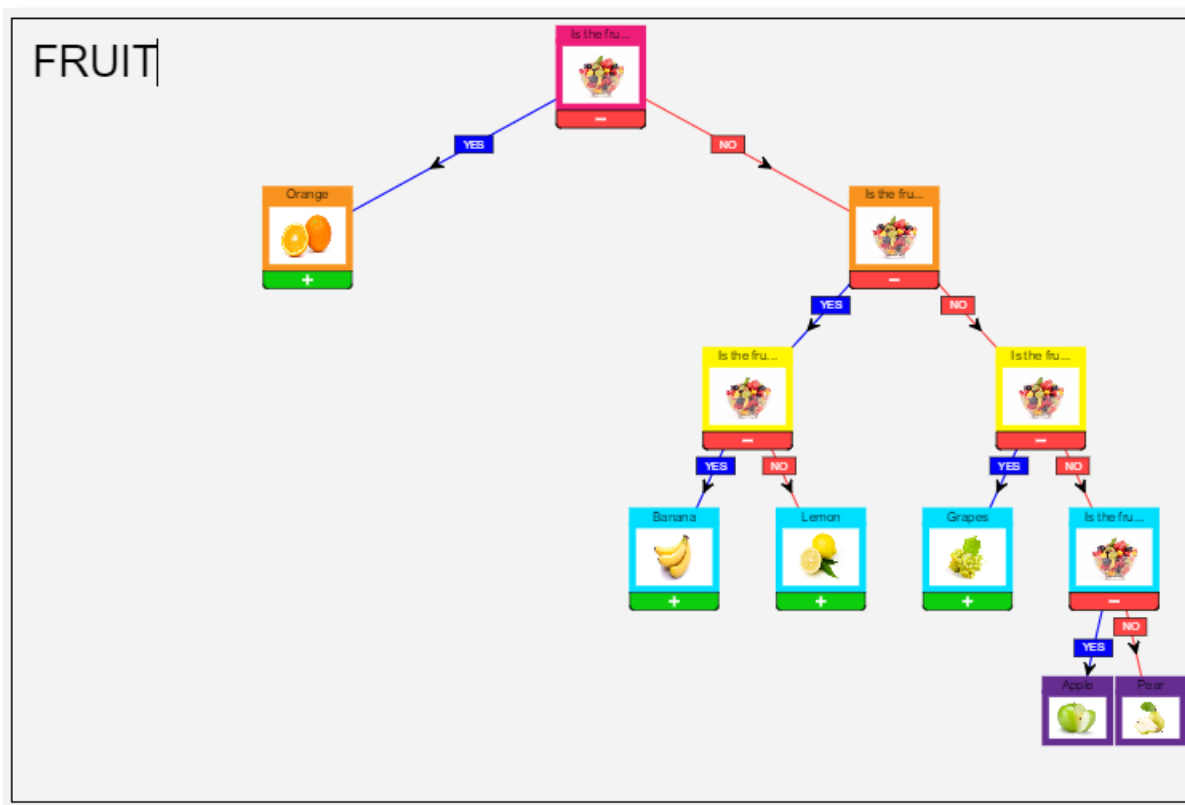
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10. The finished 2Question file will look something like the one shown below:



11. The pupils should go to their computers and open the 2Question file 'Vegetables' from their 2Dos. This is partially completed as it is missing the questions. Ask the pupils to write the questions.
12. Bring the pupils together and then look at some of their completed vegetable databases. Try playing them; do they work?

**Extension:**

Show pupils an image of an apricot. Using the branching database, check what fruit it is (it will not give the correct answer, it will say 'orange').

How could the database be edited to allow apricot in?

Pupils should think of a question that would be asked after you choose YES to 'is it orange', add that question and add new results for orange and apricot.

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# Lessons 3 and 4

## Aim

- To create a branching database of the pupils' choice.

## Success criteria

- Pupils can choose a suitable topic for a branching database.
- Pupils can select and save appropriate images.
- Pupils can create a branching database.
- Pupils know how to use and debug their own and others' branching database.

## Resources

- [Appendix 5](#); Animals examples. See lesson plan for the use of these pictures.

## Activities

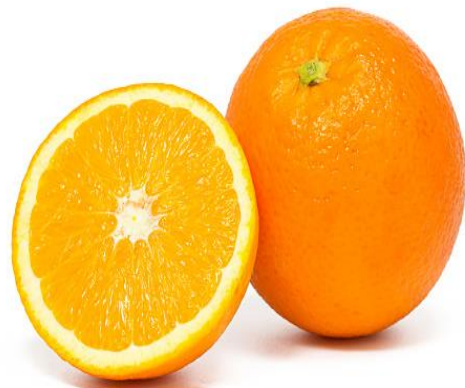
1. Share the learning objectives and success criteria with the pupils. Recap the learning from the last lesson.
2. In these two lessons, the pupils will create their own branching database. Some pupils will be able to choose their own topic and gather appropriate images online. It is advisable not to choose more than 10 objects.
3. Some pupils may find it easier to create a branching database about animals. At the end of the document are eight animals that could be used. These animals are easy to separate using YES/NO questions and the images can all be found in the clipart bank which can be found in 2Question.
4. Some pupils will find it easier to use paper versions so they can plan their database before they sit at the computer.
5. At the end of Lesson 3, the pupils need to ensure that they have saved their work so they can continue it in Lesson 4.
6. When the pupils have finished their database, they could share it on a display board, via a class blog or email it to a classmate to try. The classmate should try and find a missing object and help to devise a question to add it to their friend's database.

### Extension:

In Purple Mash class area, or on paper, have a prepared branching database containing errors (yes answers go to no branch, images are incorrect, etc) Pupils need to test, debug and amend the database so that it works correctly

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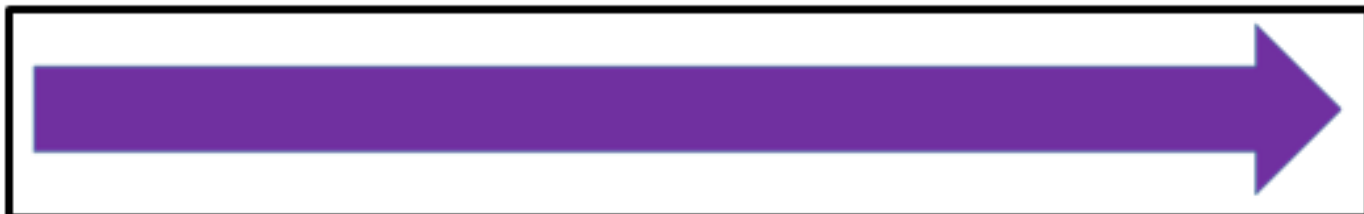
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yes

no

yes

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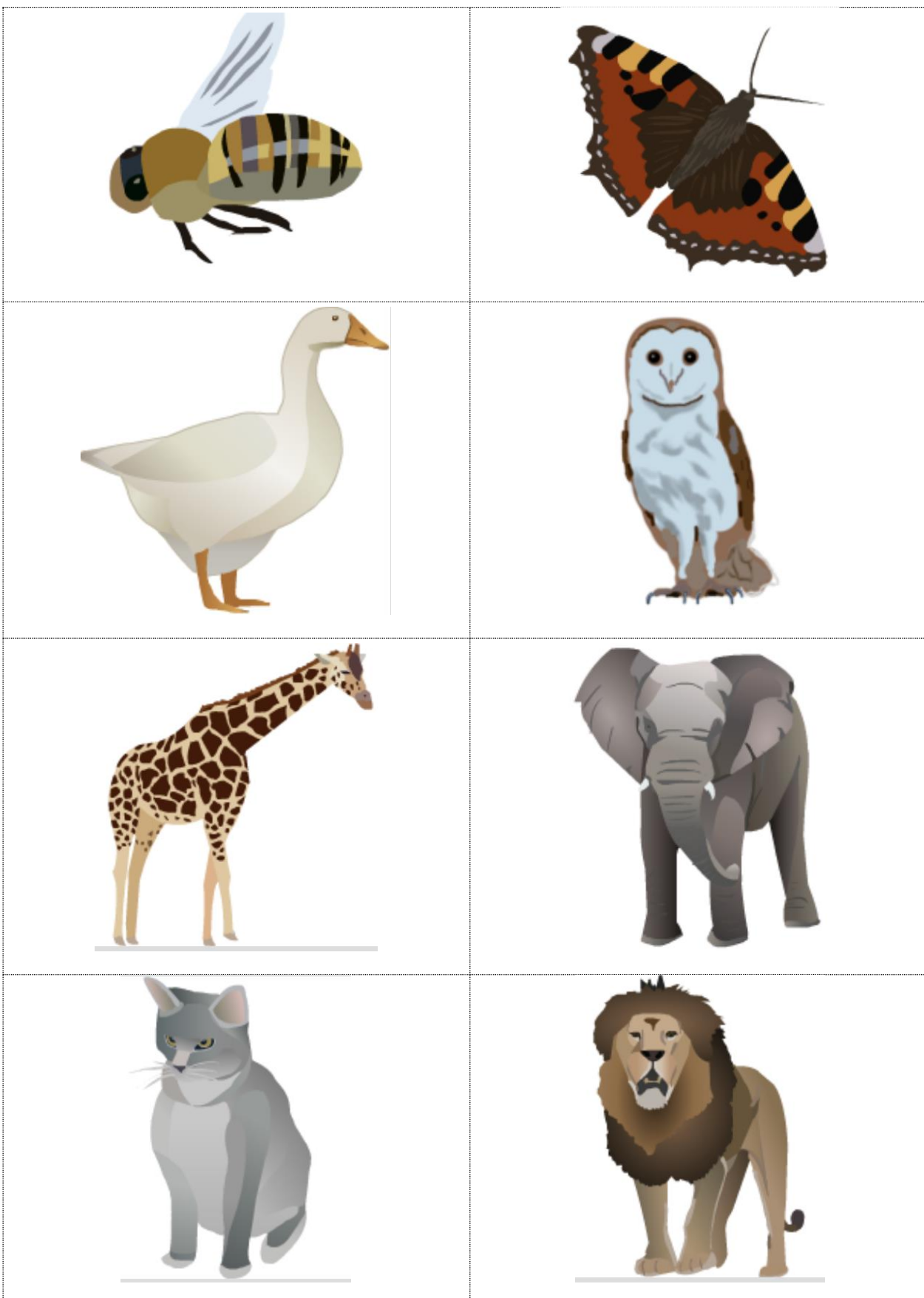
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# Assessment Guidance

The unit overview for year 3 contains details of national curricula mapped to the Purple Mash Units. The following information is an exemplar of what a child at an expected level would be able to demonstrate when completing this unit with additional exemplars to demonstrate how this would vary for a child with emerging or exceeding achievements.

Assessment Guidance	
Emerging	<p>With support and using concrete paper resources, pupils will begin to understand what a branching database is (Unit 3.6 Lesson 1. Point 4).</p> <p>In a small, supported group, they will collect, sort, and present their information using the paper resources.</p> <p>Pupils will then turn their paper branching database into a digital version using 2Question (Unit 3.6 Lesson 2, 3 and 4). The resulting branching database will demonstrate a limited number of branches.</p>
Expected	<p>Using 2 Question, pupils will learn how to create a branching database that accomplishes a given goal. They will understand how to collect, analyse, evaluate, and present their data and information throughout the unit initially as a paper Yes/No game (Unit 3.6 Lesson 1. Point 4) and then as a digital version of a branching database (Unit 3.6 Lesson 2, 3 and 4).</p> <p>Most pupils can create a branching database and are able to successfully debug it to improve the quality of their digital content creation. Their branching database would have been carefully planned before utilising 2Question (Unit 3.6. Lessons 3 &amp; 4).</p> <p>Most pupils will be able to create a branching database which includes suitable text, titles and gathering of appropriate images from online and importing them (Unit 3.6. Lessons 3 &amp;4).</p> <p>Pupils can make their own branching databases, collating and organising data by sets of questions they have considered appropriate (Unit 3.6 Lesson 1 Point 4).</p> <p>Pupils analyse each other's branching databases and can make further suggestions for improvement (Unit 3.6 Lessons 3 &amp; 4).</p>
Exceeding	<p>Pupils demonstrating greater depth understand the specific characteristics of a branching database and its application in real world situations. Furthermore, they understand the needs of the end user and can adapt their program to reflect this using supporting information (Notes can be added to each layer of the branching database).</p>

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