experience LEARNING
beyond the classroom

Name: _____

Date: _____

Dichotomous Key

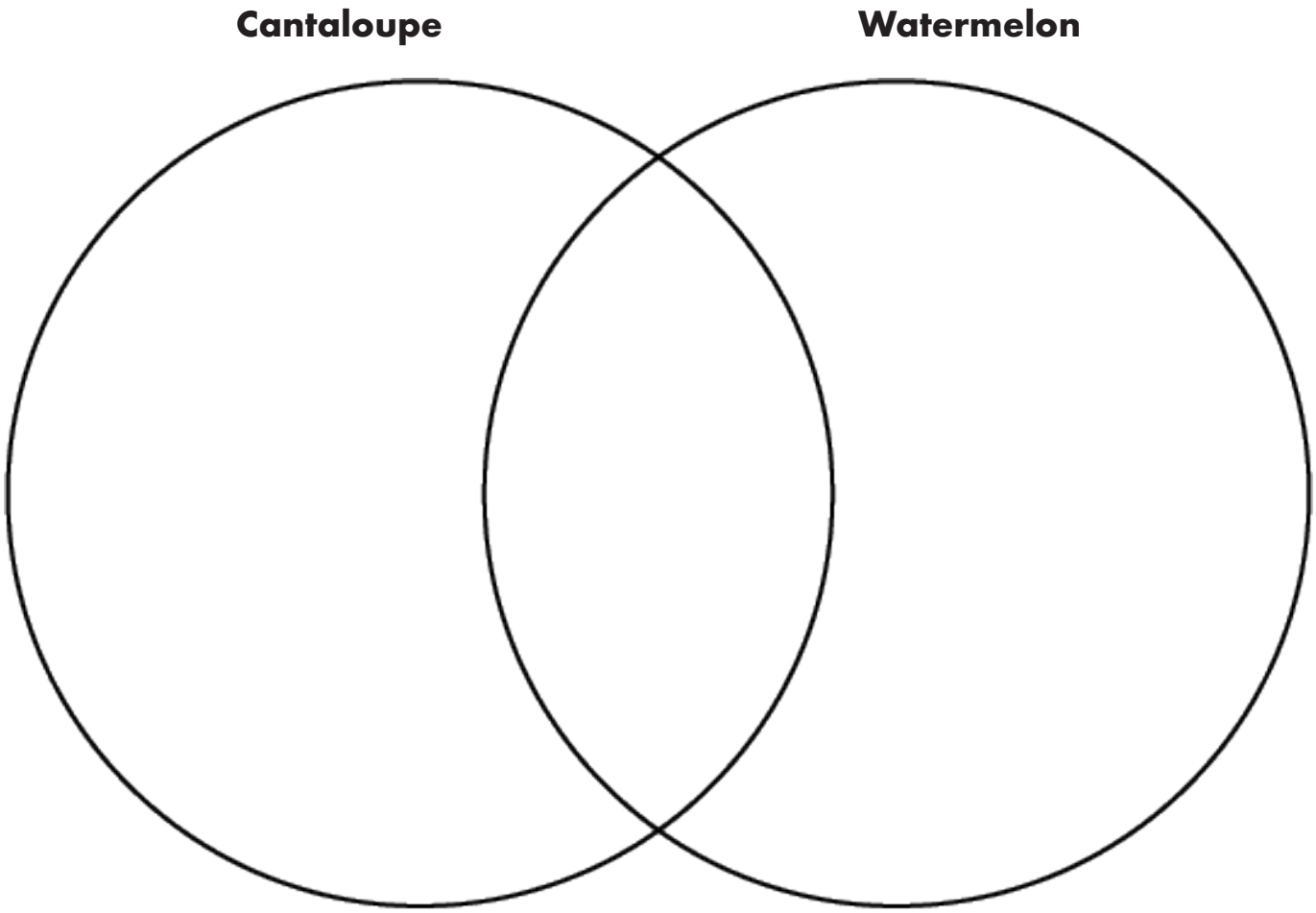
1. Read and Do — ENGAGE

How do we identify things when we don't automatically know what they are? This is a question that scientists often have to answer when they find new things out in the world.

When trying to identify something scientists make careful observations of the mysterious object in question. They look for unique characteristics and notice all of the different features. These observations could include the shape of the edges or the texture of the outside, different colors, where it was found, or what it smells like. Scientists use their five senses to make observations.

For a moment, pretend that you are a scientist who just discovered cantaloupes. You are already familiar with watermelons and are trying to figure out all the ways in which these two melons are different. You know that cantaloupes and watermelons are different and you know which is which, but what *exactly* makes them different? It's more than just the names.

Fill in the Venn diagram below with at least 5 differences and 5 similarities between cantaloupes and watermelons. Use your 5 senses (smell, touch, taste, sight, and hearing) to make observations. List the similarities where the circles overlap.



All of the things you listed that make cantaloupes and watermelons different and unique are important for identifying which is which. These key differences are called identifying features. Scientists all over the world use identifying features to help classify and identify new plants, animals, fruits, and vegetables they find.

Using what you wrote in the Venn diagram above, list 3 identifying features of a cantaloupe and a watermelon.

Identifying Features of:

Cantaloupe:

1. _____

2. _____

3. _____

Watermelon:

1. _____

2. _____

3. _____

2. Observe Objects — EXPLORE

Set a timer for 10 minutes, go outside and take the ENTIRE 10 minutes to find the 10 coolest things you can. Take all 10 objects back inside.

Now, closely examine all the objects you collected and pick your top-five coolest or most interesting. Put the other five things back outside.

Next, using your top-five coolest objects, fill out the chart on the next page. You will use this chart later in this lesson.

Name of Object	**Drawing of Object**	**Using words describe each object. Try to describe it well enough that a blindfolded person could picture it perfectly.**	**List at least 3 identifying characteristics of each object.**

3. Dichotomous Keys — EXPLAIN

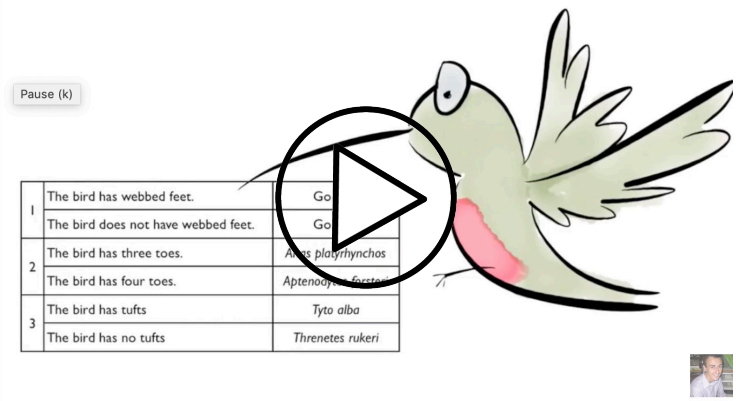
A *dichotomous key* is a device used to help us identify things based on their characteristics and observations that we can make about them. Let's break down the word to understand it better.

Di • **chotomous** • **Key**

Di	chotomous	Key
is the Greek prefix for two. You might be more familiar with the prefix *bi-* (as in bicycle) which also means 'two'. *Bi-* comes from Latin, while *Di-* comes from Greek	Dichotomous comes from the Greek word that means to cut into two parts.	A key is a device used to unlock something

A dichotomous key uses a series of if/else questions, always with only two options, to help the user figure out the name of what they are trying to identify. Each if/else question is about a different identifying feature.

Watch this video to get a better understanding:



https://www.youtube.com/watch?v=M51AKJqx-7s

Now, use the dichotomous key below to match the animal tracks to the type of animal.

1	The track has five toes	Go to 2
	The track has less than five toes	Go to 3
2	The track looks like a baby's hand	Raccoon
	The track looks like a baby's foot	Squirrel
3	The track has four toes	Go to 4
	The track has less than four toes	Go to 5
4	The track has nail/claw marks	Dog
	The track has no nail/claw marks	Cat
5	Three toes with webbing	Duck
	Three toes without webbing	Sandpiper

_____

_____

_____

_____

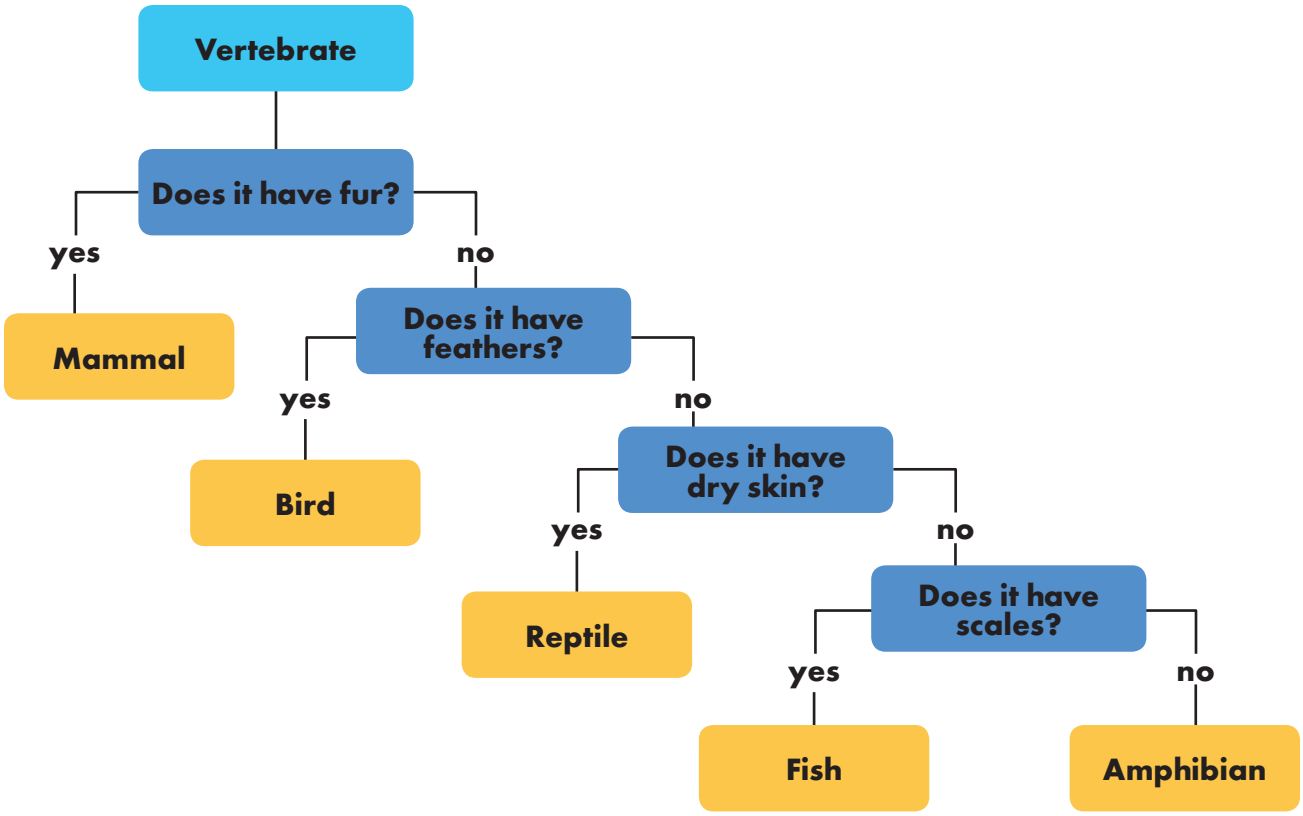
_____

_____

This is an example of a chart-style dichotomous key. On the next page you'll see an example of a graphic organizer-style dichotomous key.

They both accomplish the same goal, they just look a little different.

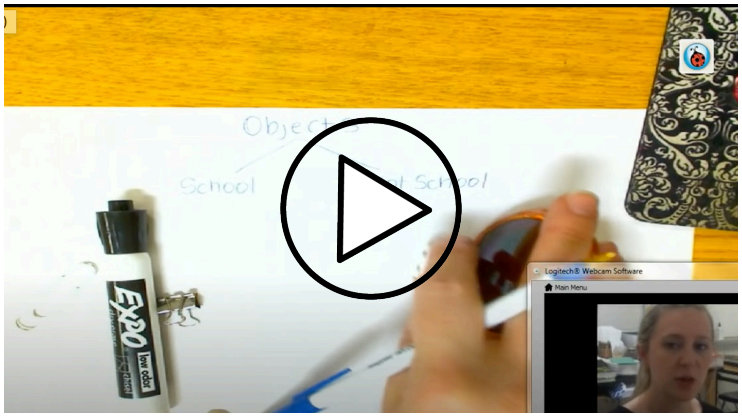
Dichotomous Key for animals



4. Make Your Own Dichotomous Key EXTEND

Now that you know what a dichotomous key is, you are going to create your own!

Watch this video and follow along using the objects you collected to create your own chart and graphic organizer style dichotomous keys on the next page. You should use the identifying features you listed in the chart for each object.



https://www.youtube.com/watch?v=1MaY4SsOGdE&t=51s

MY DICHOTOMOUS KEY

5. Reflect EVALUATE

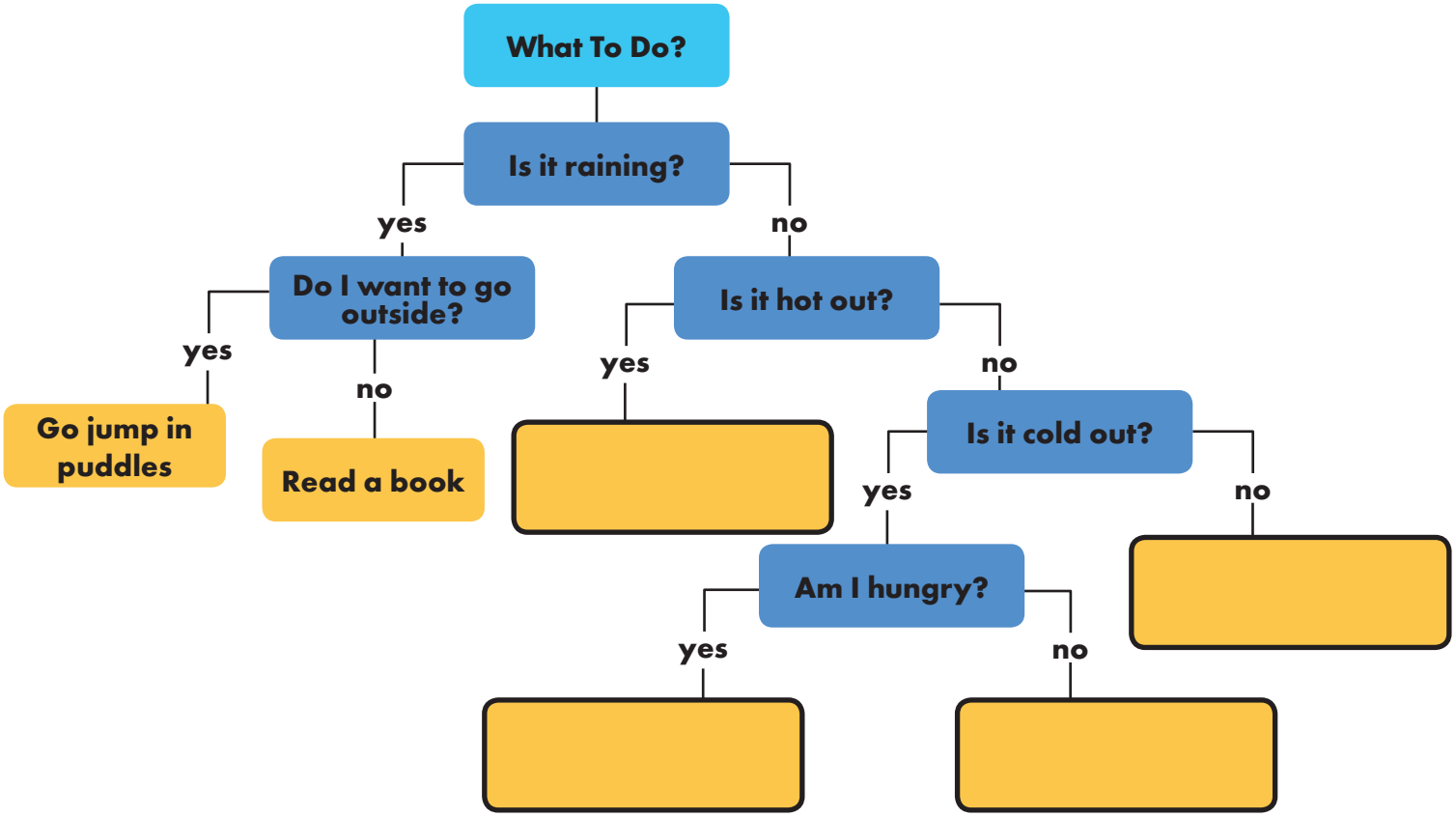
Dichotomous keys can be used for more than just identifying things.

What are some other ways that dichotomous keys can be useful in our lives?

Do you think there are some everyday decisions, or hard decisions, that a dichotomous key could help us make? How could you use a dichotomous key to decide what you are going to do after you finish this lesson?

How can a dichotomous key help you pick the answer you want?

Fill in the blank spots on the dichotomous key below with different ways you could spend your time today.



Vocabulary

Identifying Feature: a characteristic that is unique to a specific cloud, animal, fruit etc. that can be used to help distinguish it from others.

Dichotomous Key: a tool that allows a user to determine the identity of items. It asks a series of questions, always with only two answers, based on identifying features that leads the user to the correct identification/answer.