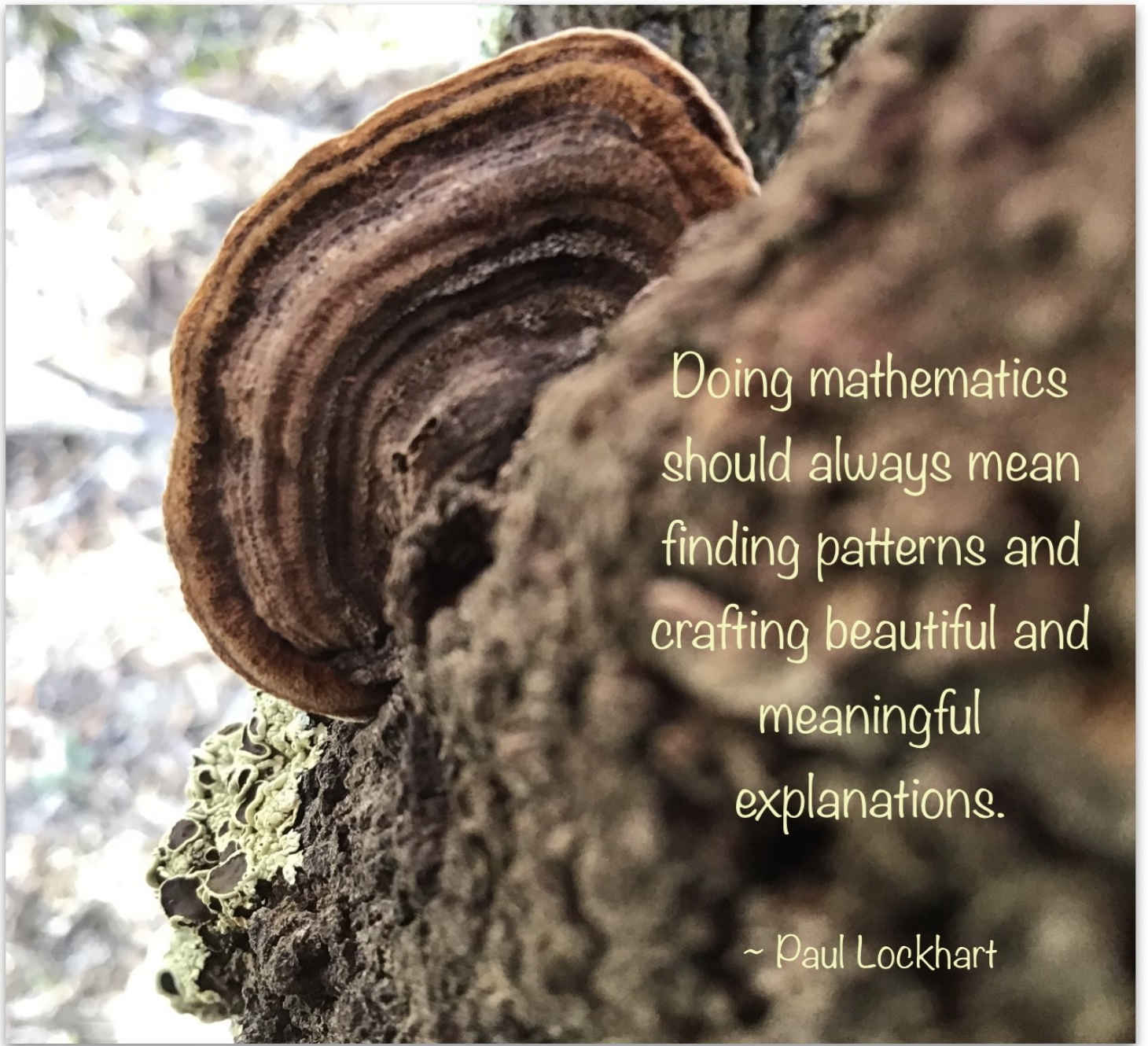


NSA

MATH *in* NATURE

SAMPLE
LESSON

DATA & STATISTICS



Doing mathematics
should always mean
finding patterns and
crafting beautiful and
meaningful
explanations.

~ Paul Lockhart

PHOTOCOPYING AND DISTRIBUTION POLICY

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What Now?

Appendix

A. Book List, Art List, Poetry List

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Welcome!

Hi!

I'm Johanna, a wife,
mum to nine,
mother-in-law to 2
and proud Grandma to
my first grandson!

...and, yes, this is how I
usually end up when
walking through the
bush. You can't walk
past an amazing insect
without taking a
photo!!!



Connect with me on
Instagram
[@jo_mathinnature](https://www.instagram.com/jo_mathinnature)



I hope that I will be able to inspire you to love math and that in turn you will inspire your children to love math. If though, I don't convince you to love the subject, I hope that by the end of the guide you at least won't loathe it.

Come along with my children and I as we explore data and statistics...

I'm very excited to be able to share this guide with you!

If you have any questions or need help with using this guide please feel free to email me at

jo.mathinnature@gmail.com

About this guide

Observing our world can be fascinating. By recording our observations we can see patterns. These patterns can help us plan and predict.

This guide has been designed to help you explore Data and Statistics with your children.

I have attempted to show the way that we explore math in our family. I hope it is a blessing to you!

This guide is NOT

- a comprehensive math curriculum.
- designed to teach your child everything about data and statistics.

You should not feel that you need to do everything in this guide. It is meant to be just that... a guide. Pick and choose what will work well for your children.

You can work through the lessons at your own pace. Typically my family will take 4 weeks to cover a topic.

I have also structured this guide so that you can use it to launch a nature research project.

It will take 5 weeks to complete if you chose to do this.

The first week is planning and preparation.

The second through forth, gathering the data.

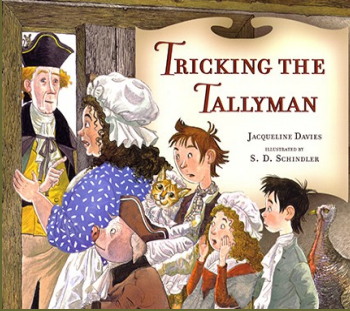
And the last week is putting it all together in a graphic display.

If you choose to do the project all the extra information can be found in the Appendix.

It makes me wonder...

Lesson 1

Data Collection



This is a fun story about a census in America in 1790 you can hear it being read [HERE](#).

Did you know that we have lists of information from as far back as around 3,000 BC?

Clay Cuneiform tablets have been found that list things like how much grain, sheep and cattle were kept at the temples, or what rations people were given.

The Bible also contains important lists, the Book of Numbers is full of informative lists.

When we read the story of the Birth of Jesus we are told that Mary and Joseph went to Bethlehem because there was to be a census. A census is when a country or nation counts how many people it has. In Australia, we have a census every 5 years, where important information is gathered. Our next census is planned for August 2021.

But why have people always gathered and stored information?

What do you think?

Let's find out...

When we collect information to help us understand a problem, or answer a question, we call that information

DATA

When starting out on a research project, we need to decide:

WHAT we want to know, and then decide **HOW** to get the DATA we need to answer our questions.

5 Steps in collecting data for a research project:

1. Decide what information you want to collect.
2. Set a time frame.
3. Decide how you are going to collect the data.
4. Collect the data.
5. Use the data to answer your questions.

Ways that we can collect data.

Survey/Quiz	Experiments	Observation
-------------	-------------	-------------

Lesson 1

Data Collection

What Can I Do...

- Research Cuneiform tablet lists. Can you make your own clay tablet with the numbers 1-10? Go [here](#) to learn the symbols.
- Brainstorm the kinds of things you could make lists of. Here are some ideas to start you off:
 - Birds that live in your backyard.
 - Plants that flower this month.
 - What I like to eat.
- Copy the definition of data on a copy-work page. See the activity pages at the end of the guide.
- Use the 3 Part cards to learn the ways to collect data.
- Fill out the 4 square data activity sheet, *What are the different ways to collect data*. See the activity pages.
- Read some of the lists in the Bible book Numbers. Think about why it was important to record these things.
- Start a Nature Data Journal.
- Join a citizen science group that records nature data like [QuestaGame](#) or [iNaturalist](#).

PROJECT NOTE:

If you are doing the project, it is time to think about what your topic will be.

Look What I've Discovered...

Add photos of your work to your math journal.

Add any copy-work or worksheets to your math journal.

Re-tell the story of *Tricking the Tallyman*.

Tell someone what you discovered about people keeping lists in history and why these lists are important.

Add your nature observations to QuestaGame or iNaturalist

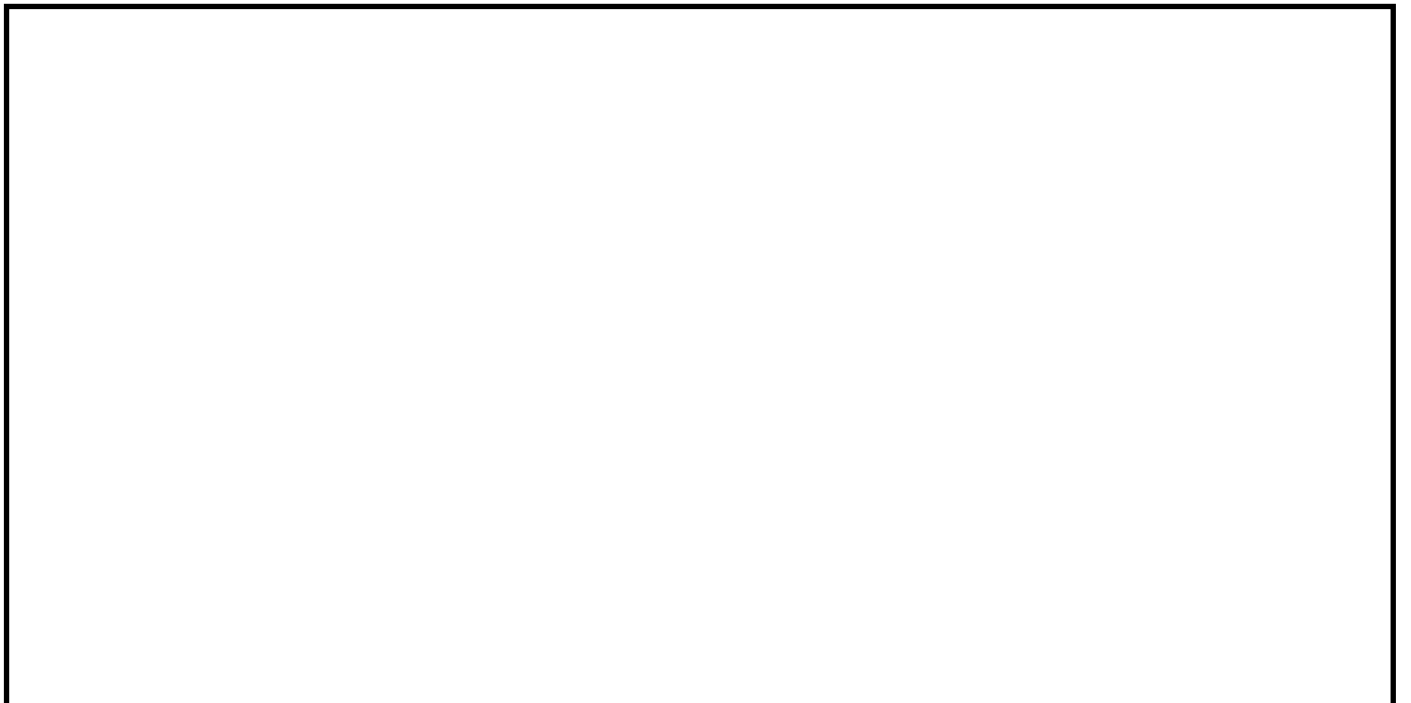
Data`is`information

we`gather`to`answer`a question.

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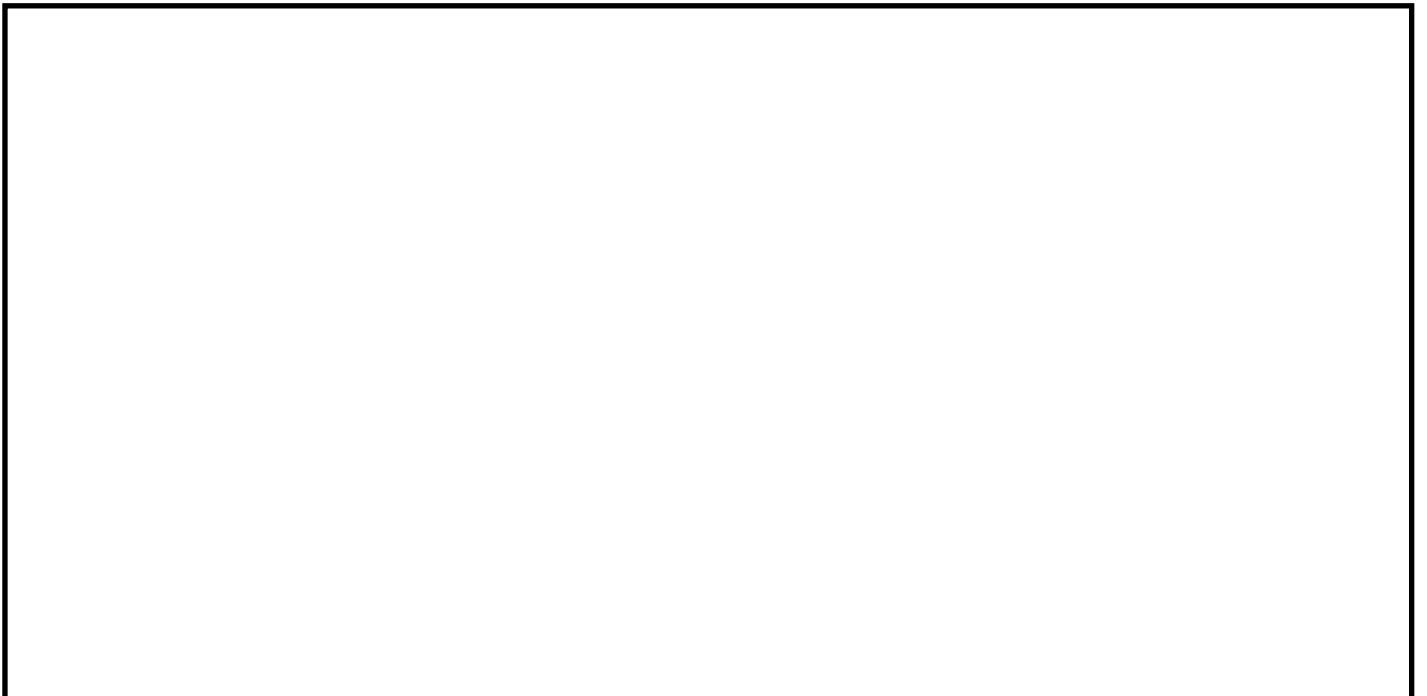
Data\is\information

we\gather\to\answer\a\question.

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What are the different ways to collect DATA?

Each box is a method you could use to collect data.

Write questions that show when you would use each method.

I have done one in each box to get you started.

Survey or Quiz:

Do the people in your town prefer to camp at the beach or in the bush?

Interview:

What are the main skills that a National Parks Wildlife officer has?

Observation:

How many different species of spiders live in my backyard?

Experiments:

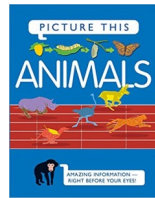
What type of soil is best for the tree I want to grow?

Appendix A

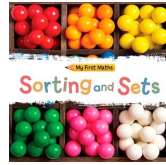
Book List

Books

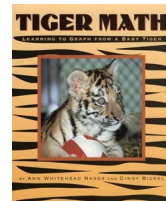
Here is a list of books I have referred to in this guide. It is not necessary to have access to them to be able to complete the lessons, they are just my suggestion of books that will enhance your study of Data and Statistics.



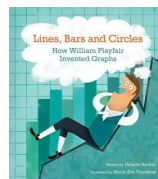
[Picture This](#) - Animals by Margaret Hynes



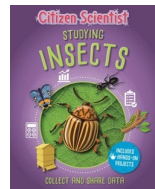
[Sorting and Sets](#) –My First Maths by Jackie Walter



[Tiger Math](#)— by Ann Whitehead Nagda



[Lines, Bars and Circles](#)—by Helaine Becker

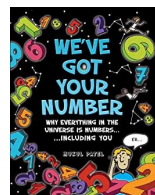


[Citizen Scientist Books](#)—by Izzi Howell

Insect

Plants

Pollution



[We've Got Your Number](#)— by Mukul Patel