There are a lot of factors to consider when choosing the most helpful tool for your analysis.

**One way you could decide which tool to use is by the size of your dataset**.

When working with data, you'll find that there's **big and small data**.

**Small data** can be really small. These kinds of data tend to be made up of datasets concerned with specific metrics over a short, well defined period of time. Like how much water you drink in a day.

Small data can be useful for making day-to-day decisions, like deciding to drink more water.

But it doesn't have a huge impact on bigger frameworks like business operations.

**You might use spreadsheets to organize and analyze smaller datasets when you first start out.**

**Big data** on the other hand has larger, less specific datasets covering a longer period of time. They usually have to be broken down to be analyzed.

Big data is useful for looking at large- scale questions and problems, and they help companies make big decisions.

**When you're working with data on this larger scale, you might switch to SQL**.

Let's look at an example of how a data analyst working in a hospital might use mathematical thinking to solve a problem with the right tools.

The hospital might find that they're having a problem with over or under use of their beds. Based on that, the hospital could make bed optimization a goal.

They want to make sure that beds are available to patients who need them, but not waste hospital resources like space or money on maintaining empty beds.

Using mathematical thinking, you can break this problem down into a step-by-step process to help you find patterns in their data.

There's a lot of variables in this scenario. But for now, let's keep it simple and focus on just a few key ones. There are metrics that are related to this problem that might show us patterns in the data: for example, maybe the number of beds open and the number of beds used over a period of time.

There's actually already a formula for this. It's called the **bed occupancy rate**, and it's calculated using the total number of inpatient days, and the total number of available beds over a given period of time.

What we want to do now is take our key variables and see how their relationship to each other might show us patterns that can help the hospital make a decision.

To do that, we have to choose the tool that makes sense for this task. Hospitals generate a lot of patient data over a long period of time. So logically, a tool that's capable of handling big datasets is a must. SQL is a great choice.

In this case, you discover that the hospital always has unused beds. Knowing that, they can choose to get rid of some beds, which saves them space and money that they can use to buy and store protective equipment. By considering all of the individual parts of this problem logically, mathematical thinking helped us see new perspectives that led us to a solution