

The Big Exploration

Week Four: Maths

Hello! My name is Emily and I look after Year 5 to Year 9 outreach at Oxford Brookes University.

Hi guys! my name is Will and I work for Oxford Brookes University.

Hi everybody, my name is Catrin and I'm a current student at Oxford Brookes University

And this is The Big Exploration - Week Four: Maths!

Hello everybody and welcome back to the Big Exploration. This week we're going to be looking at Maths. Now I'm sure you've done Maths in school, things like addition, subtraction, multiplication, your times tables, division, all of that good stuff, but maybe you've never had a chance to think about how Maths is done at university, or how Maths is used in research, and that's exactly what we're going to be looking at today.

So hopefully, you've done your worksheets, but if not, don't worry just head to our website, download it, fill it in and join us right back here when you're done!

I really hope you enjoyed this week's worksheet, and you've enjoyed finding out about all of the Maths-related things you can study at university, which might be completely different to what you ever thought you could do! So next, let's go onto my favourite section, 'Is that really research?'

Can you detect a cat walking across a keyboard?

So yes, this is real research! An American computer scientist developed a program that can tell when a cat, just like this one, is walking across your computer keyboard.

He developed this after his sister's cat accidentally walked across her keyboard and completely crashed her computer. This program can detect when a cat's on your keyboard and safely shut your computer down. Of course, this program needed a lot of development, research, and of course, maths!

What's the total surface area of Indian elephants?

Yes! This is groundbreaking research by Kerala Agricultural University in India. They studied elephants of all different sizes in order to create a way to predict the surface area of Indian elephants. They found the best way was to use the elephant's height to its shoulder, and the size of its footprint, to create a formula that would predict their surface area!

How far can penguins defecate?

This is real research, by International University Bremen, now Jacobs University Bremen, in Germany. They researched how much poop-firing pressure penguins had to build up in their

body, in order to fling their bodily waste. They found out that penguins employ up to sixty kilopascals of pressure, (that's a whole lot of pressure) for their body waste firing purposes!

How many photos do you need to take to make sure no one in the group has their eyes closed?

Yes! A researcher from the Commonwealth Scientific and Industrial Research Organisation got so annoyed at people blinking in photographs, that they decided to come up with a formula, to prevent it from happening. They researched: how often people blink, how long blinks last, and how long it takes a camera to take a photograph, in order to calculate the perfect formula, of how many photos to take to ensure that you get the perfect photograph.

Can you predict when a cow will stand up or sit down?

Yes! This is again real research. A group of five researchers from the Scottish Agricultural College worked on this one. They found that the longer a cow had been lying down, the more likely it was to stand up. But weirdly, it wasn't the same the other way around, so the longer a cow has been standing up, that doesn't mean it's going to lie down any time soon. How strange!

I really hope you've enjoyed looking at all the maths-related research topics that we've discussed today. I've got another question for you on your worksheet. If you were a researcher, what maths-based question would you like to ask, and what topic would you be interested in?

Remember all of the crazy topics we've looked at today relating to cats, penguins, cows, cameras, all of that good stuff. But, what would your question be?

So that's all the time we have for this week, thank you so much for taking part in the Big Exploration Maths week, we really loved having you. Next week you'll be creating your own research question, so it might be a good idea to think back on the past weeks, and think about what was your favourite topic, what questions really interested you, and have a good think about if you were a researcher, what would you want to try and find out?

We'll see you again next week guys, bye!