Nathan Day

The History and Future of Mathematics

Complete Mathematics

The history and Future of Mathematics

In the chat - What would you say to Gracie?

- Who came up with Maths? Pythagoras?
- But… how? How would you figure that out?
- How would you come up with the concept of algebra?
- What did you need it for?

The Problem

Our pupils don't always see mathematics the way we do.

- ∞ **Richness**
- ∞ **Life**
- ∞ **History**
- ∞ **Proximity**

In the chat, write one word that you associate with maths.

The Solution?

Bring these aspects of mathematics into the classroom.

history

Future

What? (What?)

- The big picture
- The stories
- The characters
- The motivation

Why? (Why?)

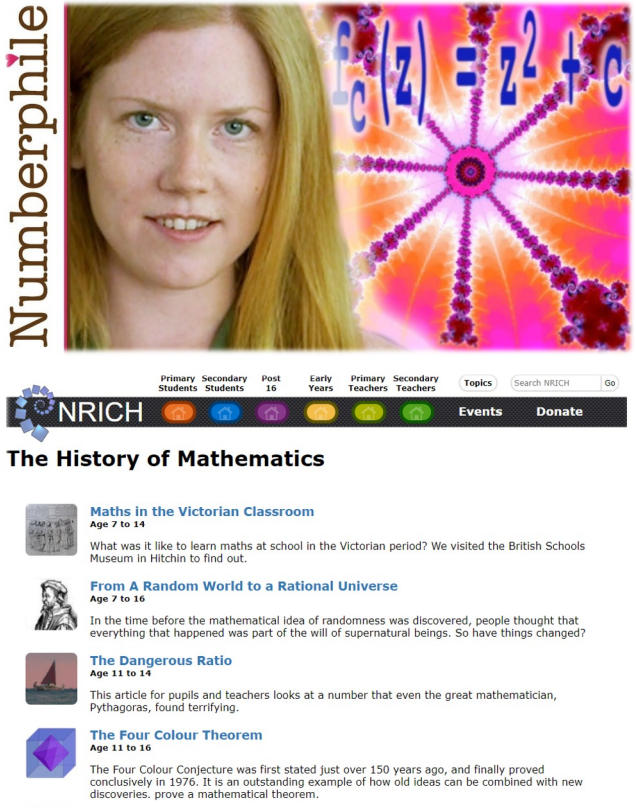
- ∞ The big picture
- ∞ The stories
- ∞ The characters
- ∞ The motivation

How? (How?)

- To introduce
- To wrap up
- In questions and tasks
- In homework

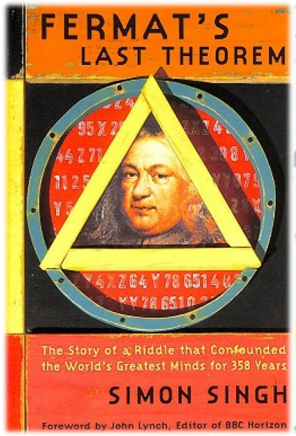
The History

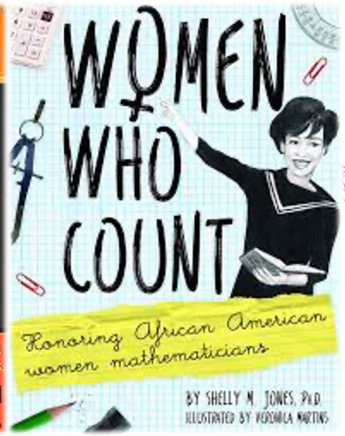
The internet

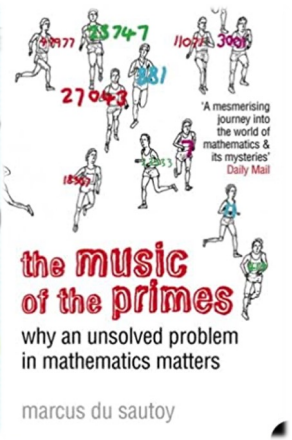


Google

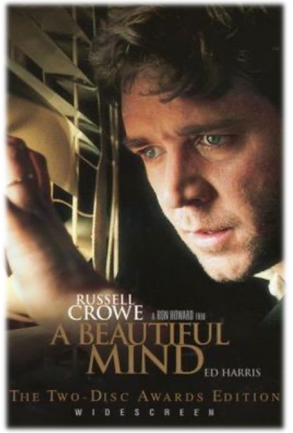
Books

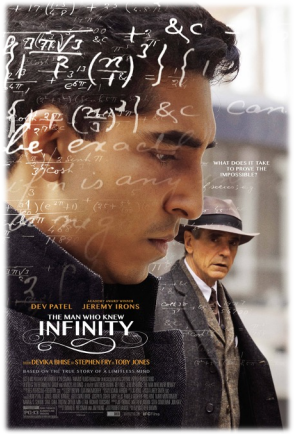




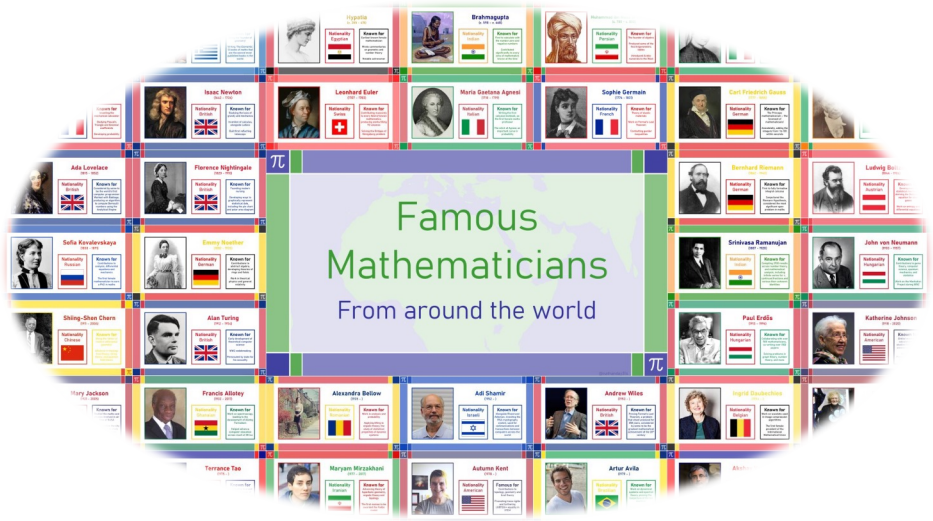


Films

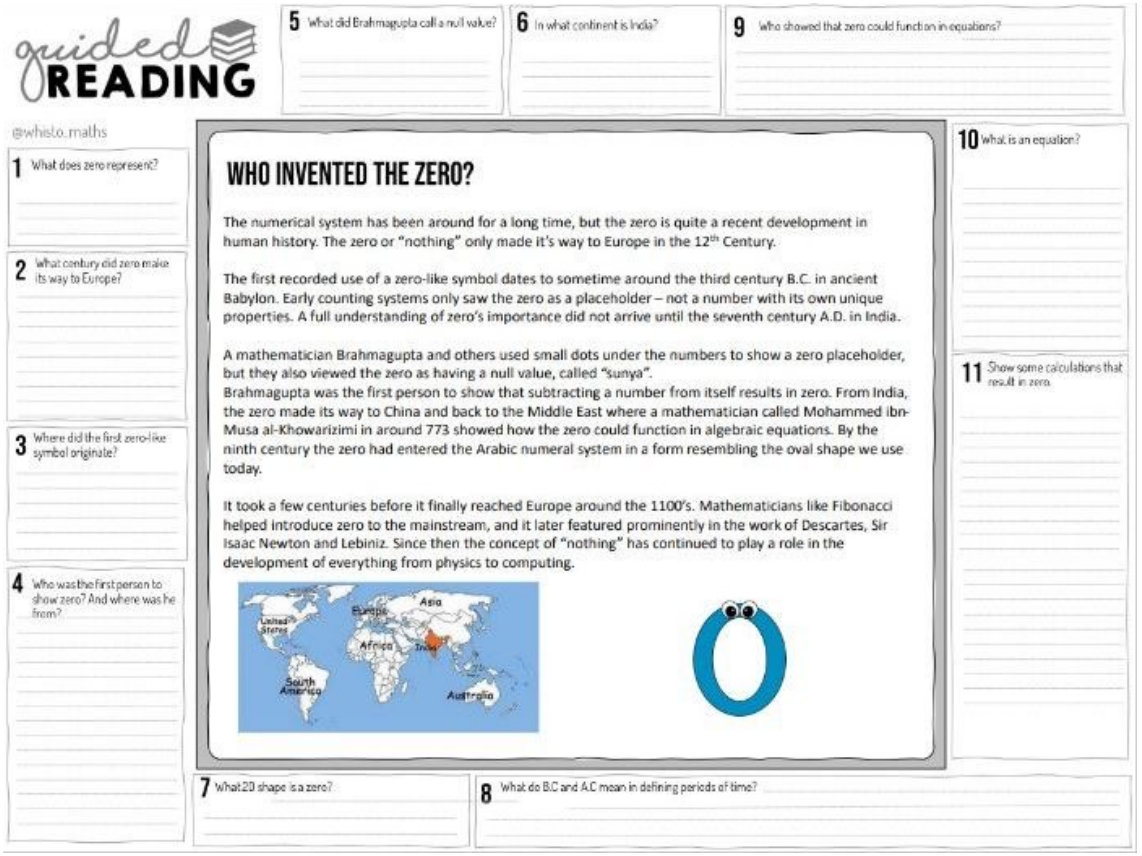




The History



Mathematicians/Quotes Wall Displays - Me!



guided READING

@whisto_maths

1 What does zero represent?

2 What century did zero make its way to Europe?

3 Where did the first zero-like symbol originate?

4 Who was the first person to show zero? And where was he from?

5 What did Brahmagupta call a null value?

6 In what continent is India?

9 Who showed that zero could function in equations?

10 What is an equation?

11 Show some calculations that result in zero.

7 What 2D shape is a zero?

8 What do B.C and A.C mean in defining periods of time?

WHO INVENTED THE ZERO?

The numerical system has been around for a long time, but the zero is quite a recent development in human history. The zero or "nothing" only made it's way to Europe in the 12th Century.

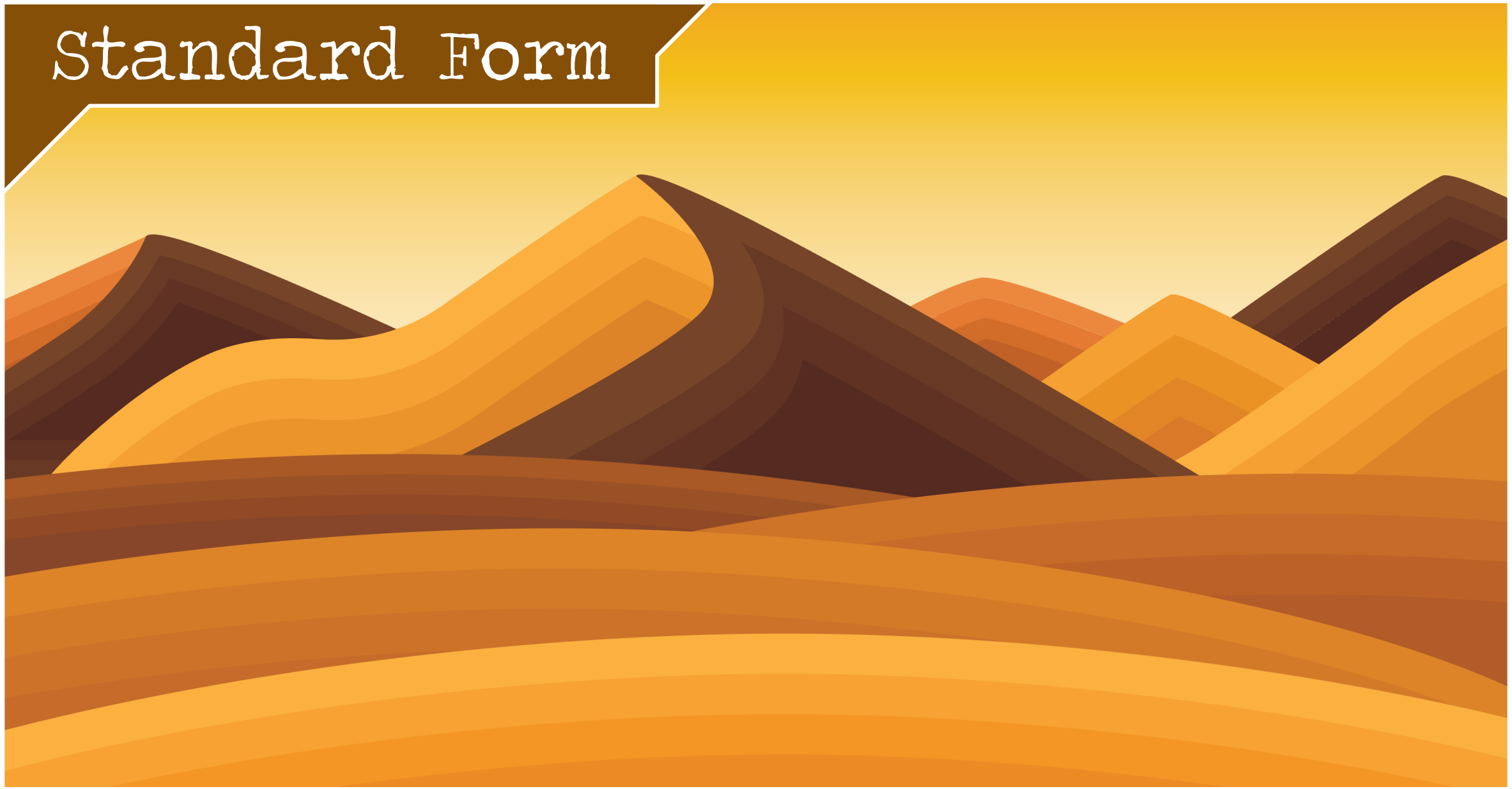
The first recorded use of a zero-like symbol dates to sometime around the third century B.C. in ancient Babylon. Early counting systems only saw the zero as a placeholder – not a number with its own unique properties. A full understanding of zero's importance did not arrive until the seventh century A.D. in India.

A mathematician Brahmagupta and others used small dots under the numbers to show a zero placeholder, but they also viewed the zero as having a null value, called "sunya".
Brahmagupta was the first person to show that subtracting a number from itself results in zero. From India, the zero made its way to China and back to the Middle East where a mathematician called Mohammed ibn-Musa al-Khowarizimi in around 773 showed how the zero could function in algebraic equations. By the ninth century the zero had entered the Arabic numeral system in a form resembling the oval shape we use today.

It took a few centuries before it finally reached Europe around the 1100's. Mathematicians like Fibonacci helped introduce zero to the mainstream, and it later featured prominently in the work of Descartes, Sir Isaac Newton and Lebiniz. Since then the concept of "nothing" has continued to play a role in the development of everything from physics to computing.

Guided Reading - Nicola Whiston (@whisto_maths)

Standard Form

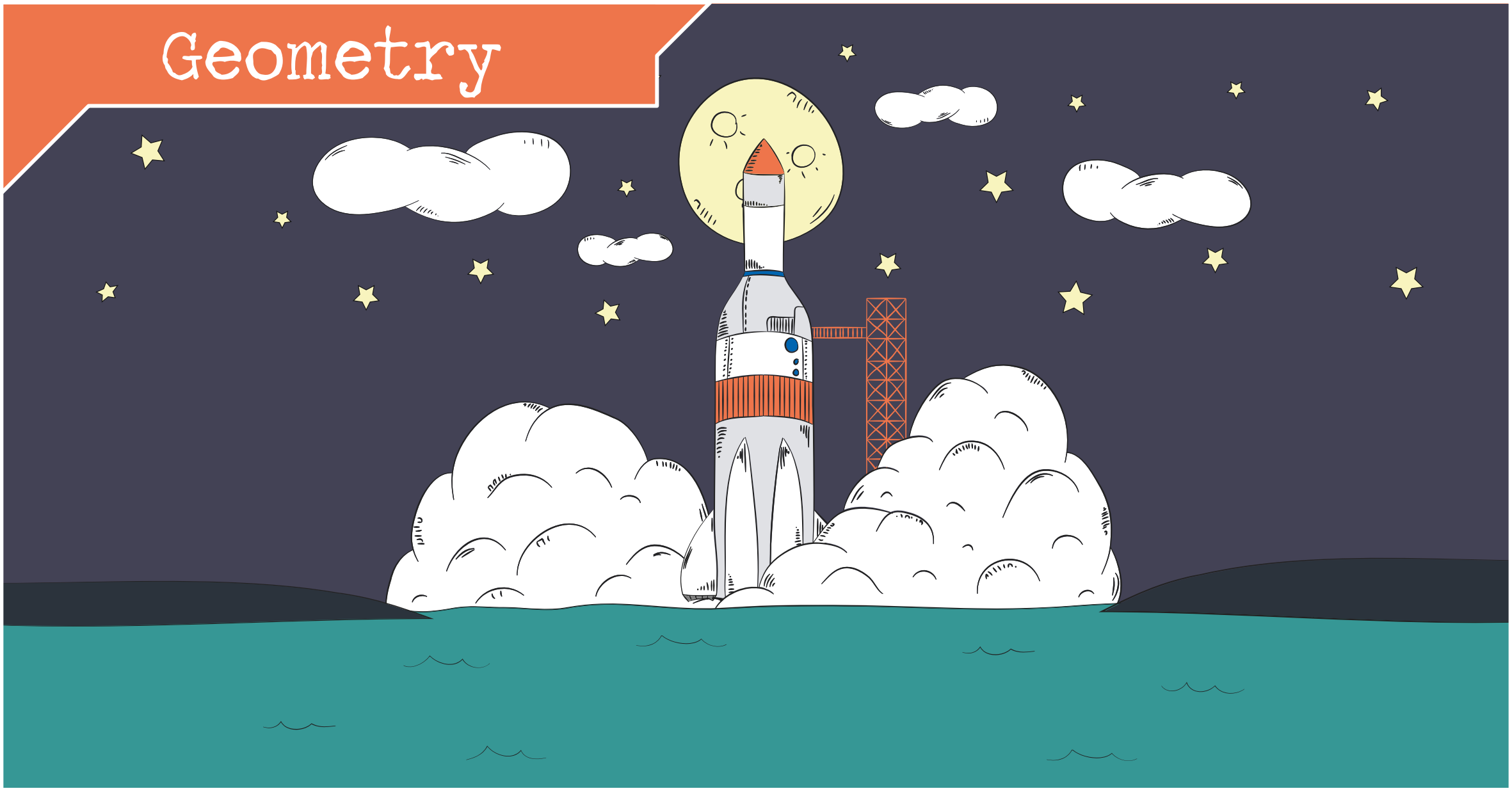


A non-existent desert near Syracuse, 2221 years ago

Bearings

Somewhere between England and Spain, 436 years ago

Geometry



Cape Canaveral, Florida, 59 years ago

The Solution?

Bring these aspects of mathematics into the classroom.

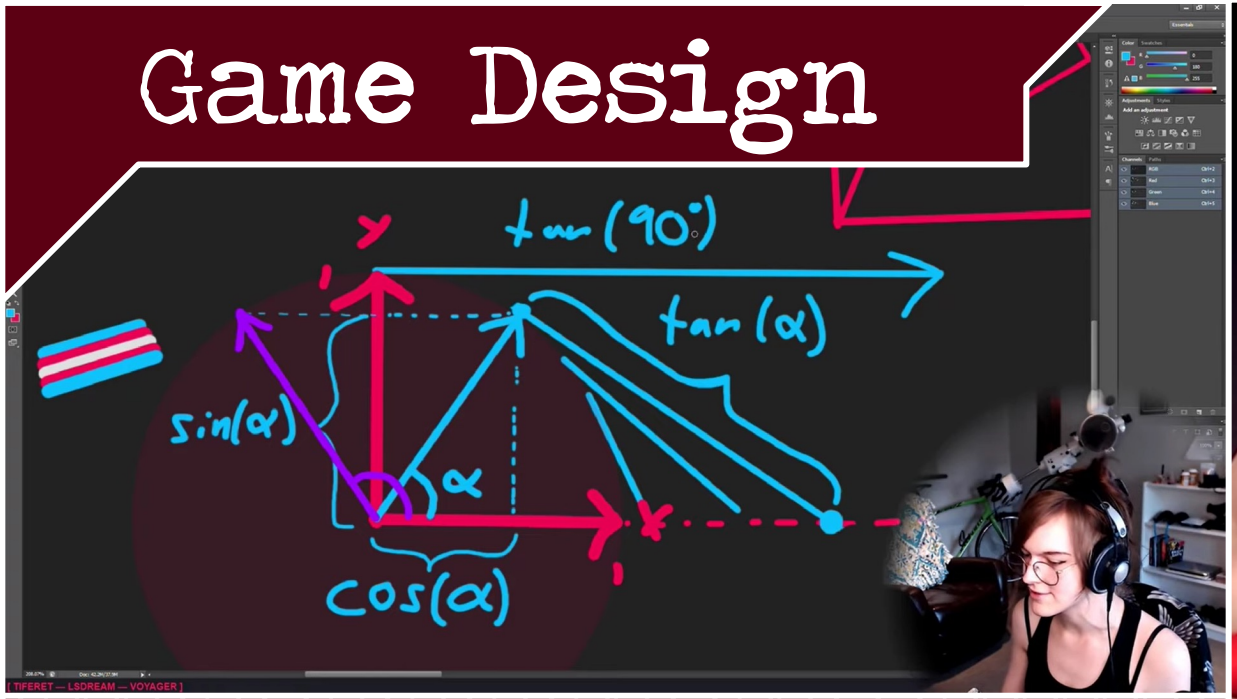
history

Future

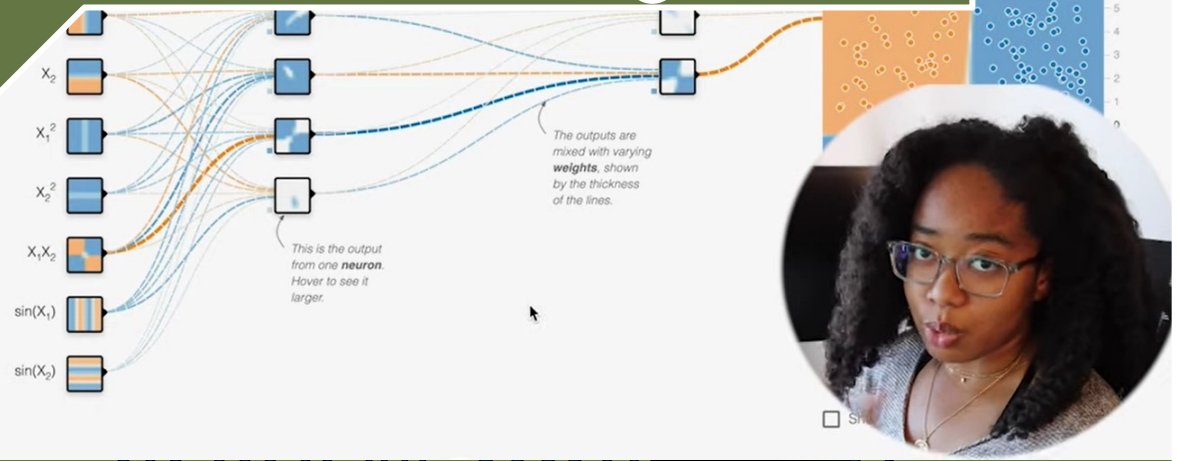
The Future

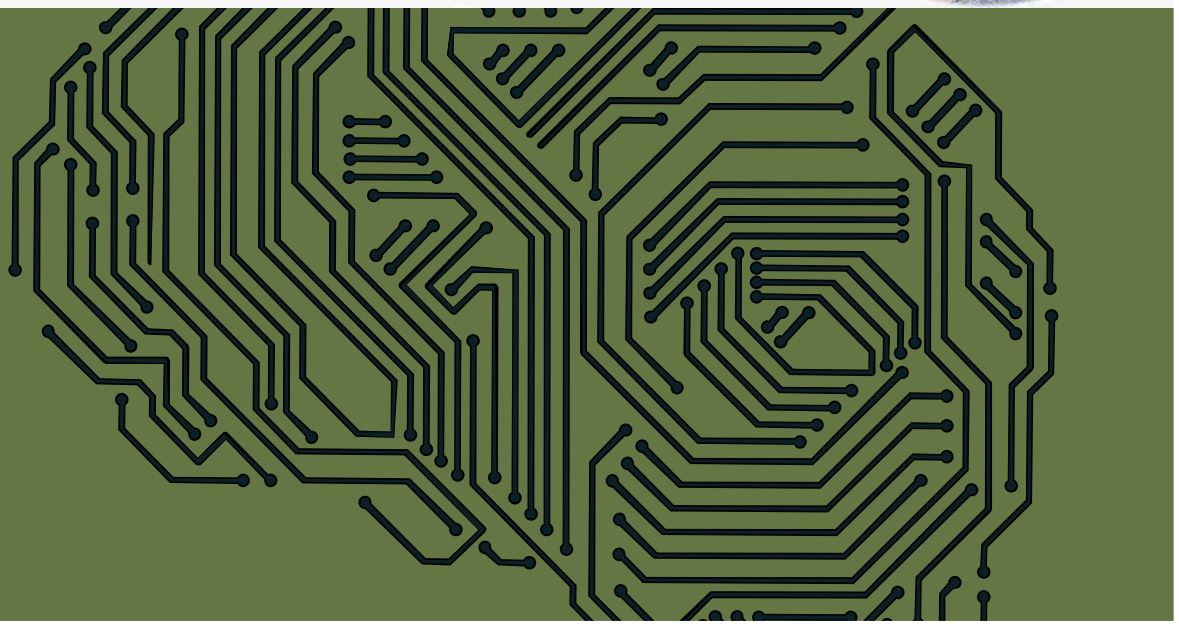
- ∞ Maths is a living subject.
- ∞ Maths will help us build a greater future.
- ∞ We can be the participants in making it so.

Game Design



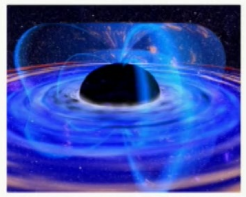
A.I. Artificial Intelligence



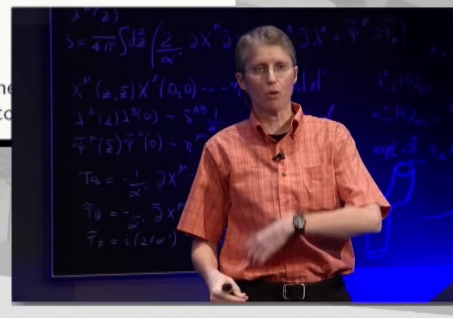


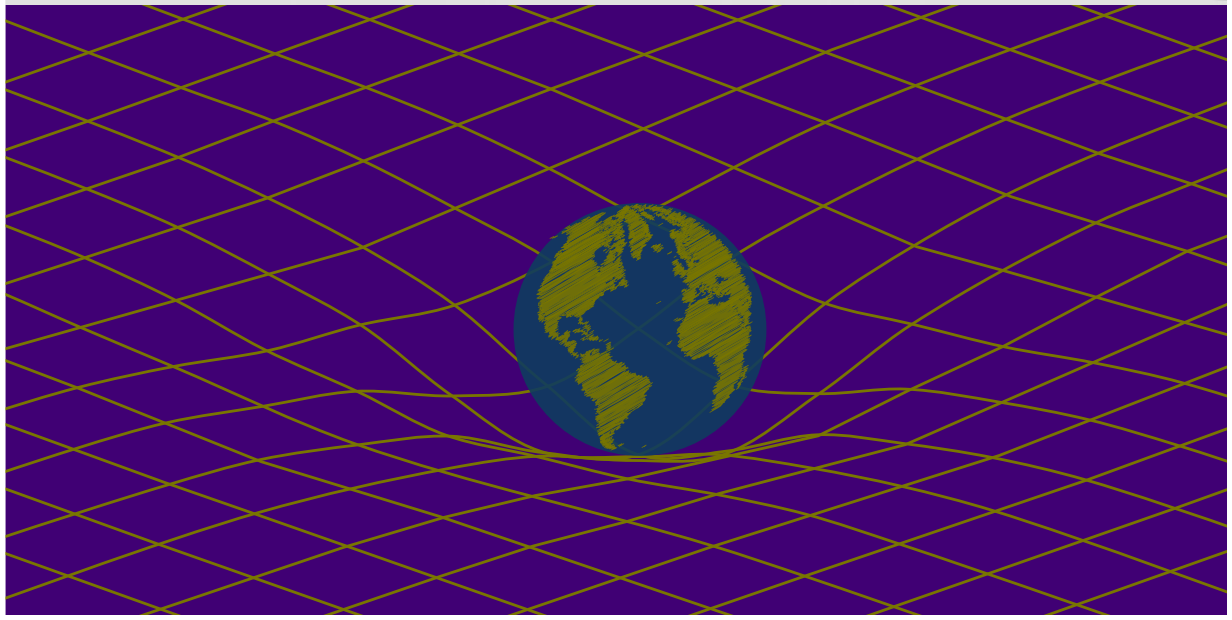
Jordan Harrod - She makes machines learn

String Theory

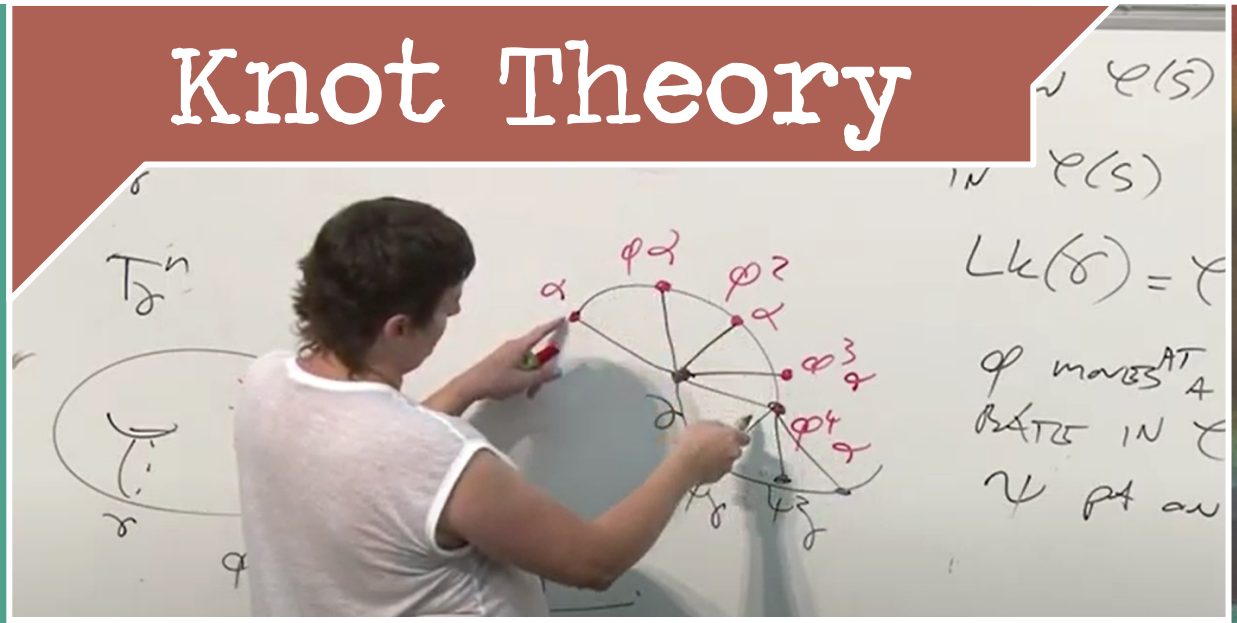


- If you replaced our sun by a sun-mass BH, our orbit would be exactly the same
  We would just not be getting any sunlight or warmth. The key is not to get to



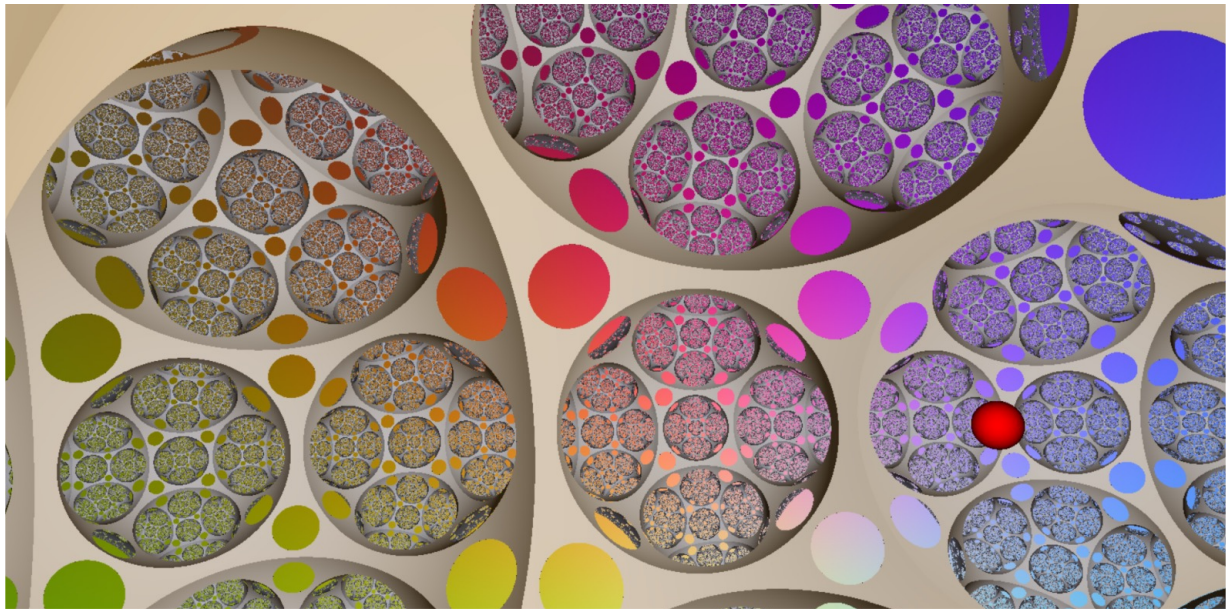


Knot Theory



Autumn Kent - She studies knots

V.R. Virtual Reality



Vi Hart - She does it all

The Future

Some considerations:

- Who is maths open to?
- Struggle and failure
- Striking a balance

- Who came up with Maths? Pythagoras?
- But… how? How would you figure that out?
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- What did you need it for?

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