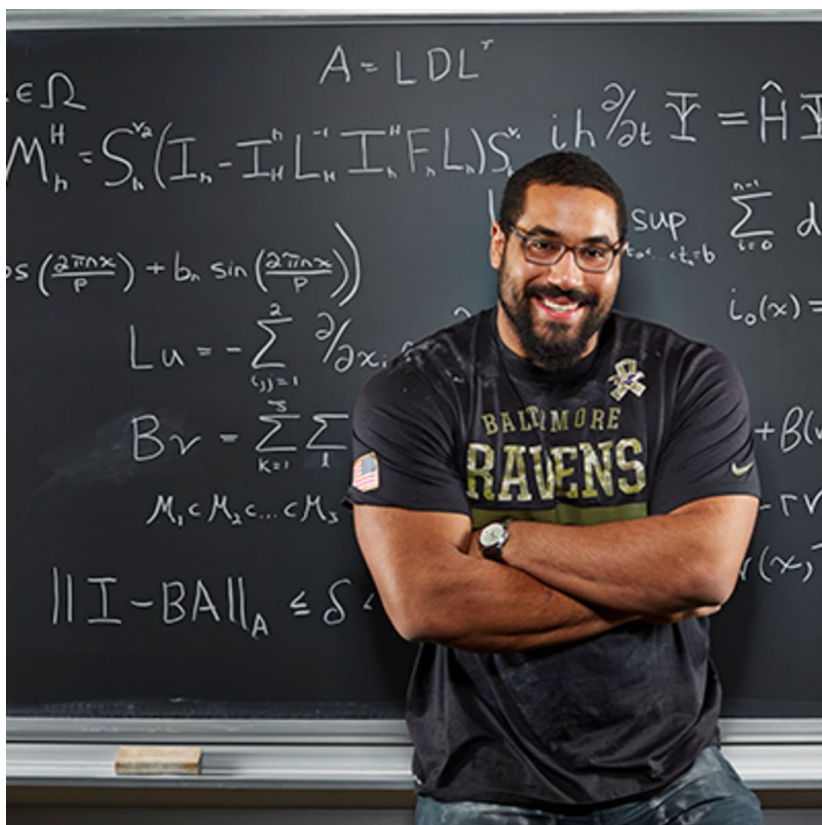


John Urschel, Retired Baltimore Ravens linebacker and mathematician



In honor of Black History month, we are excited to present an activity about a man that represents a lot of different characteristics and talents. John is Black and a mathematician. He is a mathematician and played pro football. Many people assume that these talents and characteristics aren't present in the same person. John is incredibly talented at it all.

★ As you read about John Urschel's life, try to fill in the timeline that is on the last page of this activity with the information that you are learning about his life and what you have experienced in your own life.

John was born in Winnipeg, Canada on June 24, 1991. He's now 30 years old. He's a big guy. He's 6 foot 3 inches tall and weighs more than 300 pounds. He is also learning Russian, loves to play chess, and plays the guitar. He does all of these things very well and has a great smile.

Study of mathematics

John credits his early interest in mathematics and puzzles to his mother. He loved finding things that she had hidden. Perhaps those were his first problems to solve. He loved games. His mom used his love for figuring things out to entertain him with puzzles and workbooks when he was young.

When he was a toddler, she would use his puzzle-solving interest to challenge him to figure out how much change she would receive after a purchase. When he did that too easily, she challenged him to figure out how much the tax would be on their purchase.

His mom said that he was doing multiplication at the age of 5.

At the start of elementary school, John and his mother regularly played "Four Square", "Battleship", and "Monopoly" and started to challenge each other. John was very competitive and wanted badly to win. His mom did as well.

By 2nd grade he was doing algebra and geometry.

To appreciate what John loved to do as a young child, we've given you one kind of puzzle that he enjoyed ... Zebra or Logic puzzles. John graduated to very hard logic puzzles like the famous "Einstein riddle".

See what you can figure out in this one? A grid to help your deductions is at the end of this activity. (John wouldn't have wanted a grid to help guide his deductions. He liked to make up his own helpful maps.)

Mr. and Mrs. Jones have always loved animals and encouraged their children to care for and respect their pets. As a result, the Jones household boasts three dogs and two cats. Each of the children is responsible for a pet. Can you match up the pet names, the breeds, and their owners?

- Neither the Dachshund nor *Fritzy* is cared for by Ann.
- Tom's pet and the Collie are both 2 years old.
- The Manx Cat, the Tiger Cat, and the Dachshund have been given the names, *Hans*, *Fritzy*, and *Otto* (but not necessarily in that order), but none belongs to Sue or Tom.
- The Tiger Cat, Jim's pet, and *Hans* -- who howls and barks to Paul Simon tunes -- all came as Christmas gifts.
- *Buffy* and the beagle both enjoy television.
- *Sparky* was an Easter gift.
- Bill is the oldest Jones child.

John attended High school at Canisius High School, Buffalo, New York, and graduated in 2009.

He attended college at Penn State and graduated with a Bachelor of Arts degree in only 3 years.

in 2013 he co-wrote a paper with his advisor, Ludmil Zikatanov, on the spectral bisection of graphs and connectedness. This work would later be named the Urschel-Zikatanov theorem. Since then, he has published extensively in advanced mathematics.

In 2014 he received his Master of Arts degree in mathematics from Pennsylvania State University.

He began his Ph.D. in math in 2016 and is currently a fifth-year PhD student at MIT. He expects to graduate in the Spring 2021.

With his wife, Louisa Thomas, he published his autobiography in 2019, "*Mind and Matter: A Life in Math and Football*".

Football history

From the time that he was 5 years old and saw a picture of his father in full football pads as a linebacker for the University of Alberta, Urschel wanted to play football. His opportunities to start playing were somewhat thwarted.

- Pop Warner football wouldn't have him. He was too big.
- He didn't play football in middle school because there was no helmet that fit his head.
- By 9th grade, he finally started playing football.
- He was an All-star Lineman at Penn State.
- May, 2014 - he was drafted, by the Baltimore Ravens, as a guard
- In 2015, he incurred a concussion while in a training session.
- In the weeks following the concussion, he wrote, "I'd reach for a theorem that I knew I knew, and it wouldn't be there. I would try to visualize patterns, or to stretch or twist shapes — a skill that had always come particularly easy to me — and I would be unable to see the structures or make things move."
- He recovered completely from the concussion and continued to play with the Ravens through 2015.
- As he learned more about the effects of repeated trauma on the brain, he reevaluated his life's plan and retired from the Ravens in July 27, 2017.

Grid for Jones' children's pets

		Owner					Pet type				
		Ann	Bill	Jim	Sue	Tom	Tiger Cat	Manx Cat	Beagle	Collie	Dachshund
Names	Buffy										
	Hans										
	Fritzy										
	Sparky										
	Otto										
Pet type	Tiger cat										
	Manx cat										
	Beagle										
	Collie										
	Dachshund										

Timelines

John Urschel's age for this skill or accomplishment

Traditional age for this skill or accomplishment

Sources: <https://news.mit.edu/2019/student-john-urschel-math-football-0515>
<http://math.mit.edu/~urschel/job-materials/cv.pdf>
<http://math.mit.edu/~urschel/>
https://en.wikipedia.org/wiki/John_Urschel
Mind and Matter - A Life in Math and Football by John Urschel and Louisa Thomas
<https://www.pleacher.com/mp/probweek/p2001/a050701.html>