Dr. Carolyn Mahoney

Dr. Carolyn Mahoney was the first Black women to earn PhD in Mathematics from the Ohio State University. Dr. Mahoney born in Memphis Tennessee. She grew up with a big family, Mahoney was number 6 out of 13 children! While she was younger, Mahoney attended Catholic schools, and was encouraged by the nuns there to pursue mathematics.

After High School, she attended Sienna College in Memphis, Tennessee. Mahoney got her masters from Ohio State University in 1972 and then in 1983, she earned her PhD in Mathematics.

Mahoney used math in many aspects of her life, she applied math to philosophy, engineering and teaching. Using math she focused on education and professional development for teachers. Through her passion for bettering education she was recognized for many awards and inducted into the Ohio Women's Hall of Fame. After Hard work and determination Dr. Carolyn Mahoney became the 1st female president at Lincoln University as she continued to change the face of education.

Some things to think about...

- Dr. Mahoney urged mathematicians to help examine and develop math curriculums in schools. What (if anything) would you change about math in your school?

- She strongly advocated for the professional development of teachers, why do you think this is important? Who has your favorite teacher been and why?

- Dr. Mahoney has been in many leadership positions, as a college professor, an officer at the National Science Foundation, and as the first female president of Lincoln University. What other Black leaders do you know? How can math help you become a good leader?

- How does the duality of Dr. Mahoney's engineering and math background help achieve her goals?

- Dr. Mahoney aimed to make education accessible for students in impoverished and primarily non-white communities, how do you think her background and environment impacted her career?

Her math ideas

Dr. Mahoney worked with mathematical objects called matroids. One specific type of matroids are graphic matroids. These consist of nodes connected with segments called edges (you might know them as networks or graphs).

One key idea with matroids is that of the independent sets. On a graphic matroid, we can select some of the edges. If this selection does not include a polygon, then it is called an independent set. Only polygons formed with the graph's nodes count, accidental corssings of the edges do not count.

The red lines on these examples make independent sets:
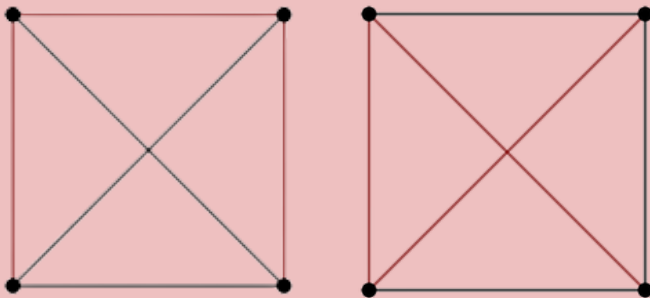
The red lines make a set that is not independent:
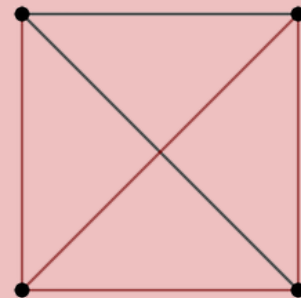
On each of the examples below, mark as many segments as possible without forming a polygon. This will be an independent set. Remember that only polygons with vertices on the dots of the graph count. Also, keep in mind that these can be irregular polygons.