

Assignment Self-Monitoring Sheet

	Assignment Effort Grade (Circle One)	Comments (What was interesting or challenging?)
Monday Date: <u>9/4</u> Topic: _____	0 1 2	NO SCHOOL LABOR DAY
Tuesday Date: <u>9/5</u> Topic: <u>Pattern Task</u>	0 1 <u>2</u>	Example Comment: "I was able to describe the how the figures were growing"
Wednesday Date: <u>9/6</u> Topic: <u>No Homework - Pre Assessment Yesterday!</u>	0 1 2	
Thursday Date: <u>9/7</u> Topic: <u>Evaluating Functions WS</u>	0 1 2	
Friday Date: <u>9/8</u> Topic: <u>Investigation: How many cups tall is the teacher?</u>	0 1 2	

Class Plan:

1. Warm-up (Finish details of investigation)
2. Pepfest!
- 3) Investigation: Stacking Cups
 - Conclusion
 - Analysis.....answer the question ...
How many cups tall is Mr. Ehlke?!?
4. Assess the productivity of our group.
5. Mathematician Project

Investigation: Stacking Cups

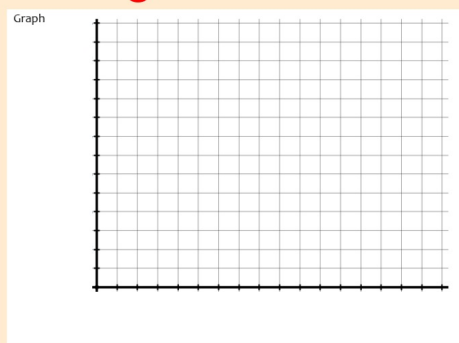
- Do: 1) Compare your work at your table.
2) Fill in missing details
3) Make sure your table has all the info!

Done? Turn it to basket

Mr. Ehlke's Height: ~71 inches/~181 cm

Table

Number of Cups	Height



Equation

Description of Story (Context)

Description (Math Language)



Done? Reflect on your estimate...

Southwest Homecoming Pep Fest Schedule (2017)
9/8/2017

Bell Schedule:

1st hour – 8:05 – 8:45

2nd hour – 8:50 – 9:30

3rd hour – 9:35 – 10:15

4th hour – 10:20 – 11:00

5th hour – 11:05 – 12:25

“A” Lunch – 11:10 – 11:40 (Class 11:45-12:25)

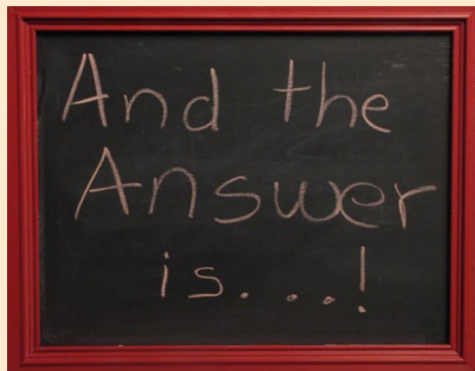
“B” Lunch – 11:50-12:25 (Class 11:05-11:45)

6th hour – 12:30 – 1:10

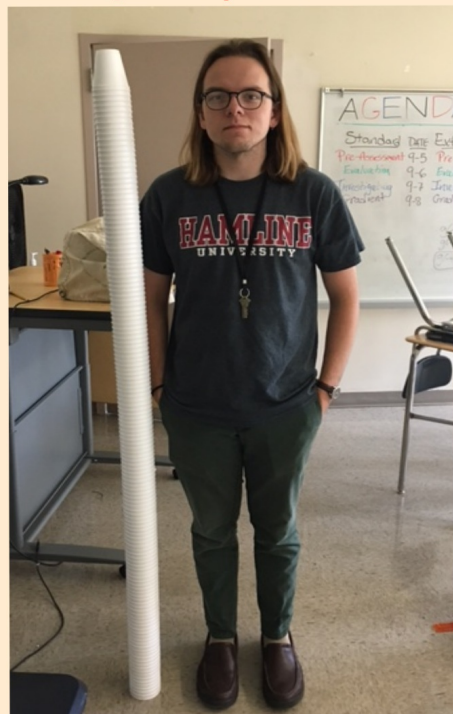
7th hour – 1:15 – 1:55

Pep Fest – 2 – 3pm (*Dismiss from Stadium after Pep Fest*)

Mr. Elhke in terms of cups :)



about 141 cups!



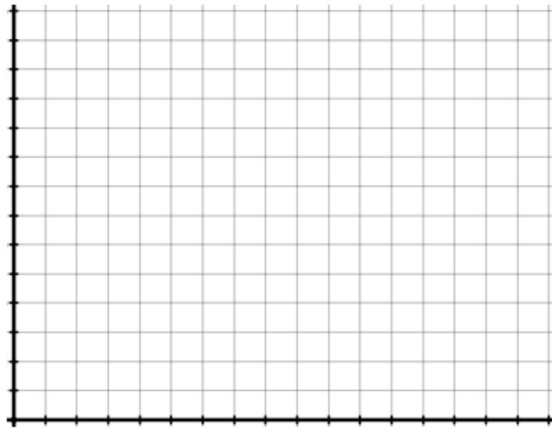
Cups – Five Forms of a Function

Name _____ Hr _____

Table

Number of Cups	Height

Graph



Description of Story (Context)

Description (Math Language)

Equation

Investigation

Analysis (on back of investigation)

Record and respond to each...

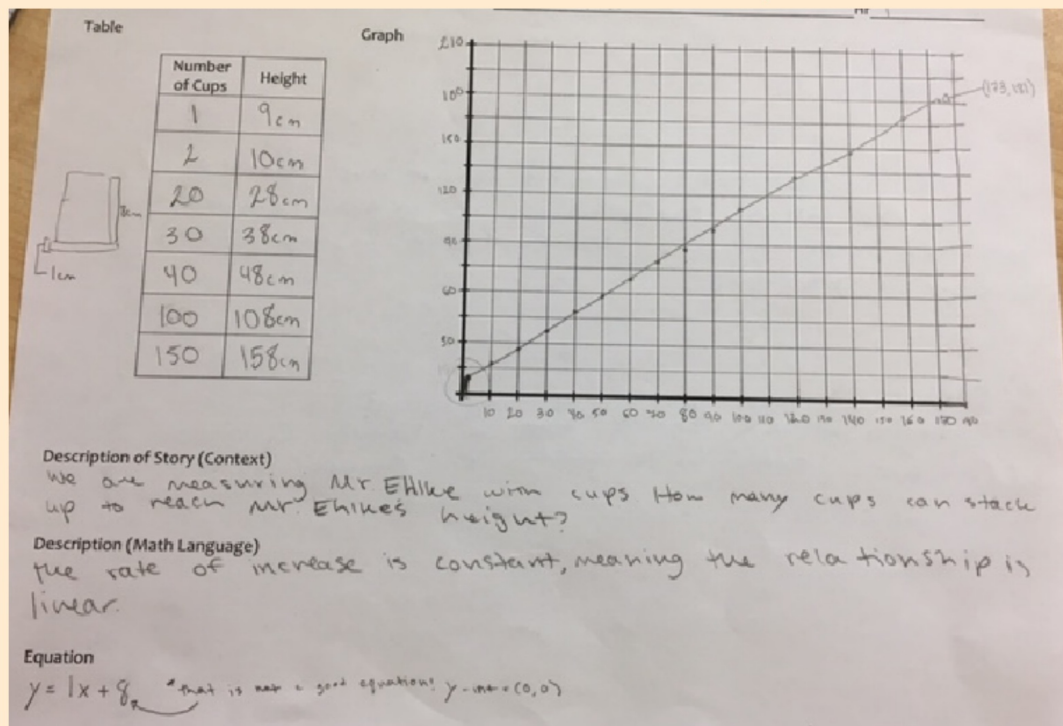
1) What is the pattern? (As you add one cup, how does the height change?)

2) As you investigate, how confident are in your estimate?

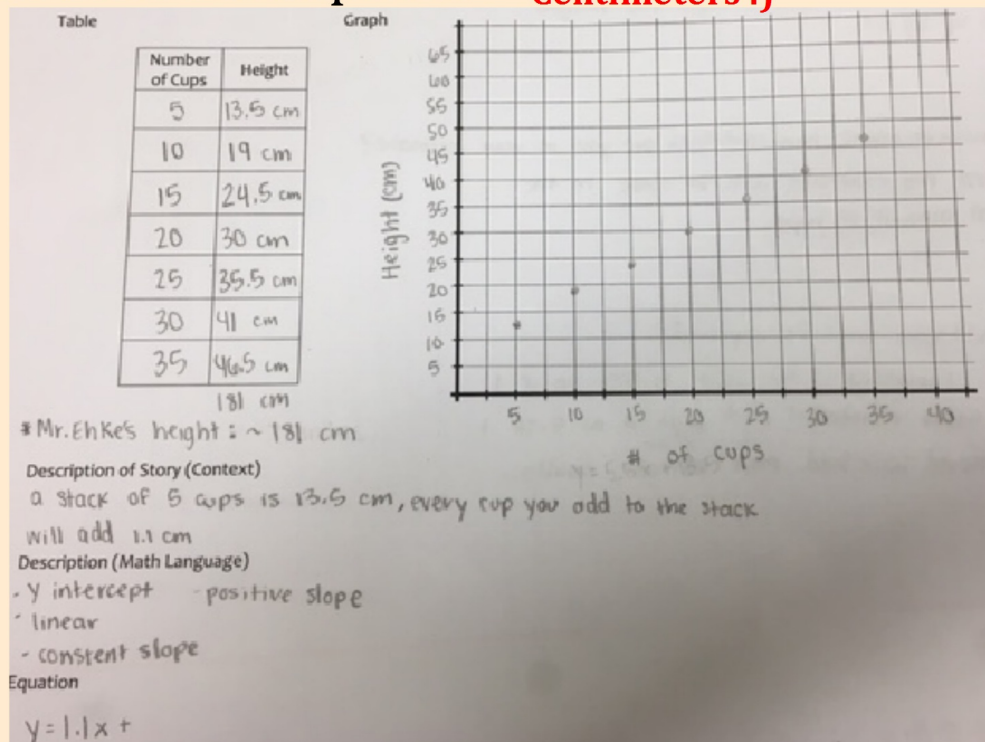
(How does accuracy in measuring affect your answer?)

3) How could your work be improved?

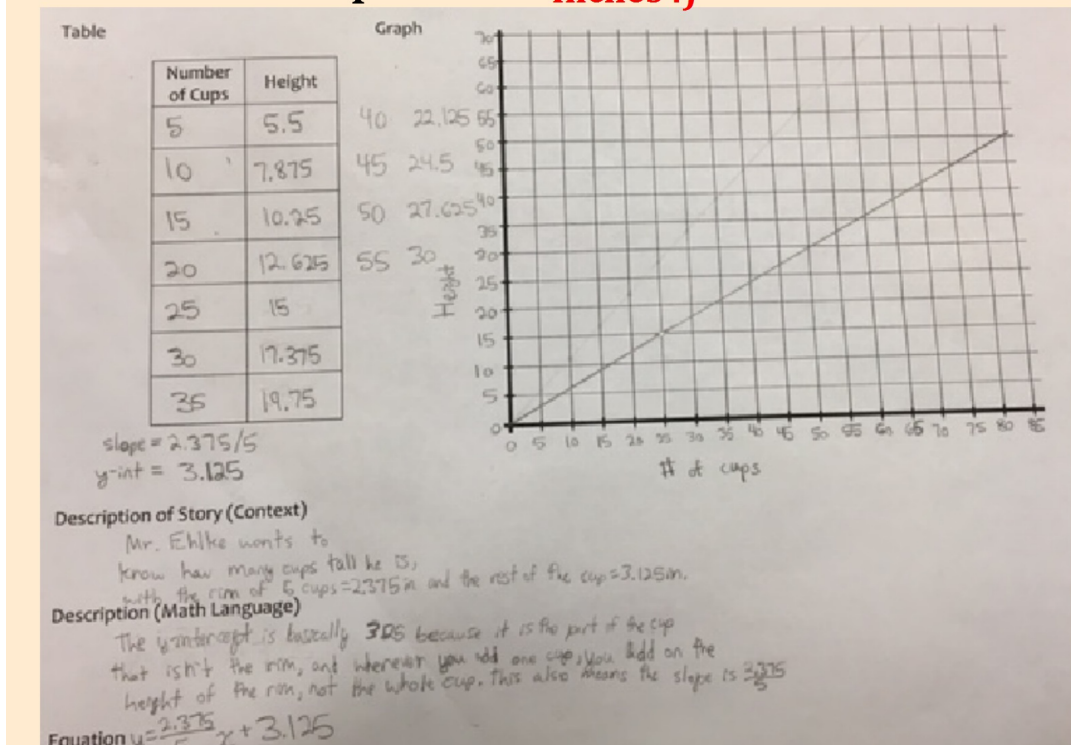
Student Exemplars! Centimeters :)



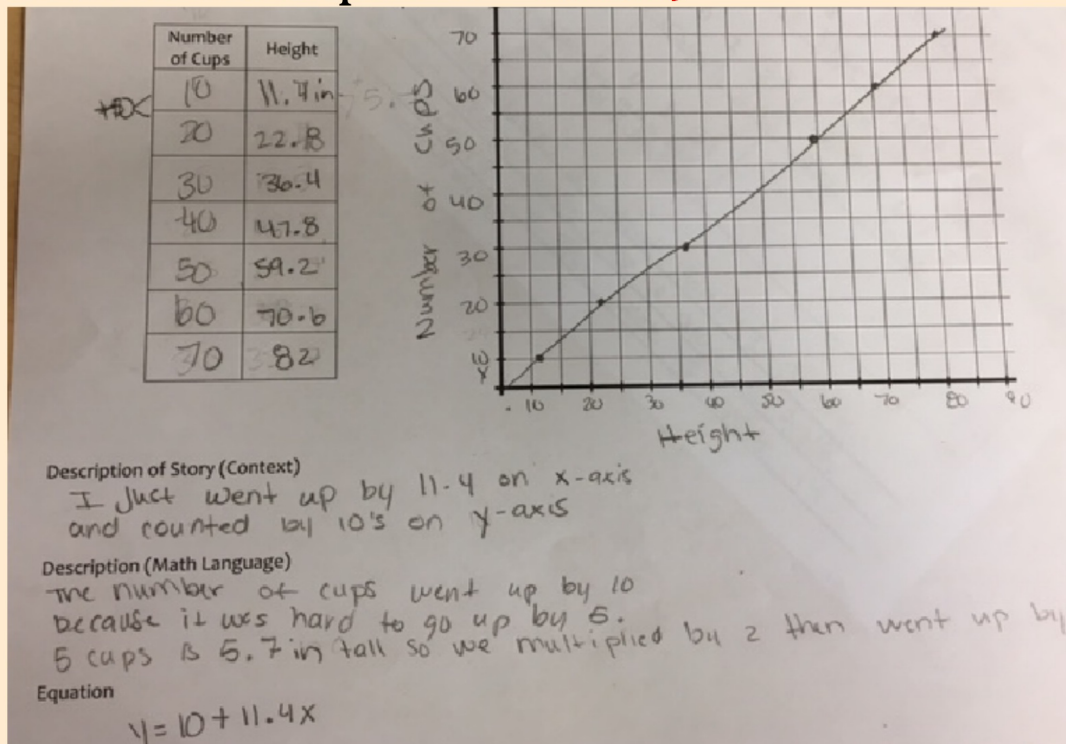
Student Exemplars! Centimeters :)



Student Exemplars! Inches :)



Student Exemplars! Inches :)



Investigation: Stacking Cups

Assess the productivity of our group.

Cups Investigation Group Assessment

Names _____

1) Rate your group's productivity in the investigation: (1 = low, 5 = productive!) _____

2) Comment on what worked well during your group work:


3) How could the group experience be improved?

Mathematician Project!

Who has contributed to mathematics??

Think and share all the famous mathematicians that you have heard of.

Einstein M^r Eⁿlike
Pythagoras ~~M^s F^olson~~



2nd hour responses!

Prepare to share with class!

Mathematician Project!

Who has contributed to mathematics??

Think and share all the famous mathematicians that you have heard of.

Einstein John Nash

THINK

Lozur Mr. Elke Ms. Payson
Gates Balken

4th hour responses!

Prepare to share with class!

Mathematician Project!

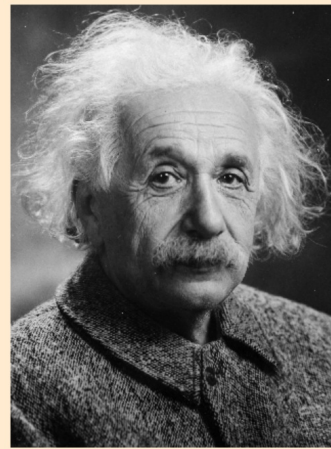
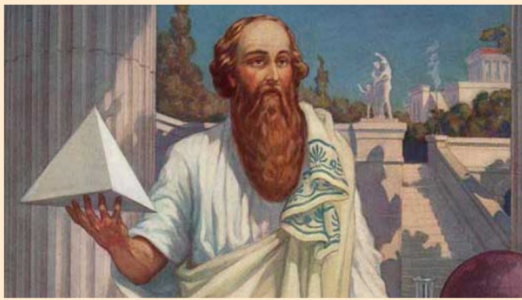
Who has contributed to mathematics??

Think and share all the famous mathematicians that you have heard of.

The word "THINK" is displayed in a stylized font where each letter is contained within a separate colored rectangular block. The letters are: T (red), H (black), I (green), N (blue), and K (brown).

7th hour responses!

Prepare to share with class!



Mathematician Project!

Who has contributed to mathematics??
Here is Dr. Okikiolu!

Kathleen Adebola Okikiolu

-Born in 1965 in England

-She is half Nigerian and half British

-George Okikiolu, her father was also a Nigerian mathematician and the most published Black mathematician on record

-Received a B.A in mathematics from Cambridge University. Got her Phd in mathematics from the University of California at Los Angeles

-Kathleen is known for her work with elliptic differential operators

-She is also the first Black recipient of the Sloan research fellowship and was also awarded a Presidential Early Career Award for Scientists and Engineers



#BlackExcellence



{Found on website: Mathematicians of the African Diaspora,
created and maintained by Dr. Williams at State U. of NY at Buffalo}

How did Kathleen Okikolu earn her PhD?

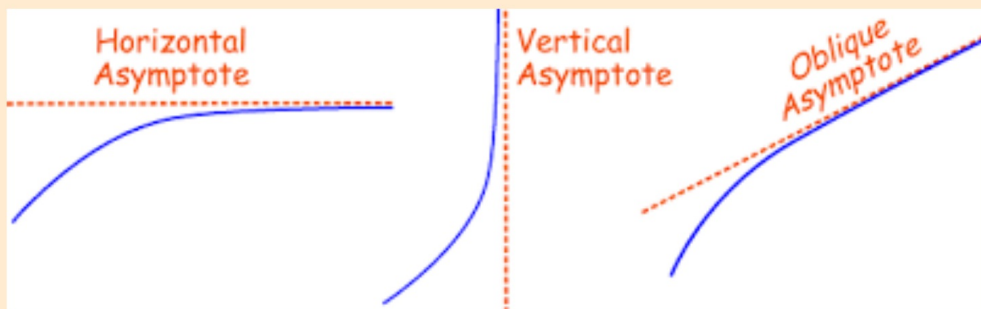
"She solved a problem concerning **asymptotics**₁ of determinants of Toeplitz operators on the sphere and a conjecture of Peter Jones, characterizing **subsets**₂ of rectifiable curves in **Euclidean n-space**₃."

How is your learning connected to what Dr. Okikolu's research?

Dr. Okikolu's research ⇔ MYP Math 9

1) In mathematical analysis, asymptotic analysis is a method of describing limiting behavior....

Slope is a foundational concept of studying asymptotes and limits.



Asymptote

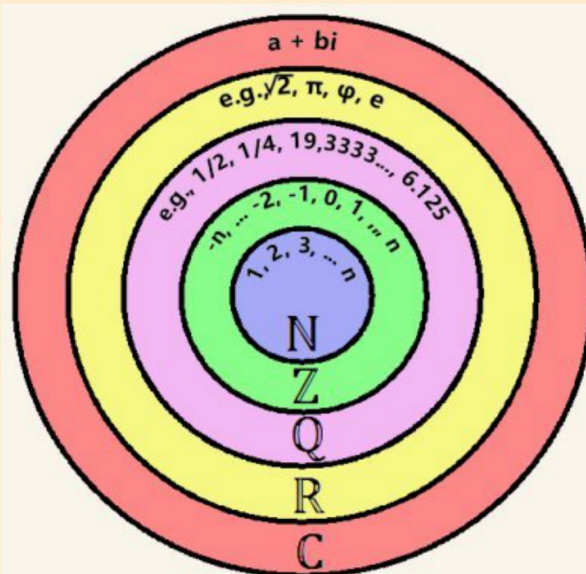
noun

plural noun: **asymptotes**

a line that continually approaches a given curve but does not meet it at any finite distance.

Dr. Okikolu's research ⇔ MYP Math 9

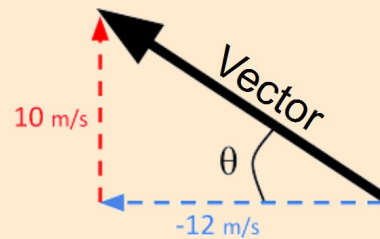
2) Subsets are a "portion" of a larger set. (i.e. 9th graders are a subset of the students at SW!) We will examine subsets of numbers during 3rd and 4th quarter.



Dr. Okikolu's research \Leftrightarrow MYP Math 9

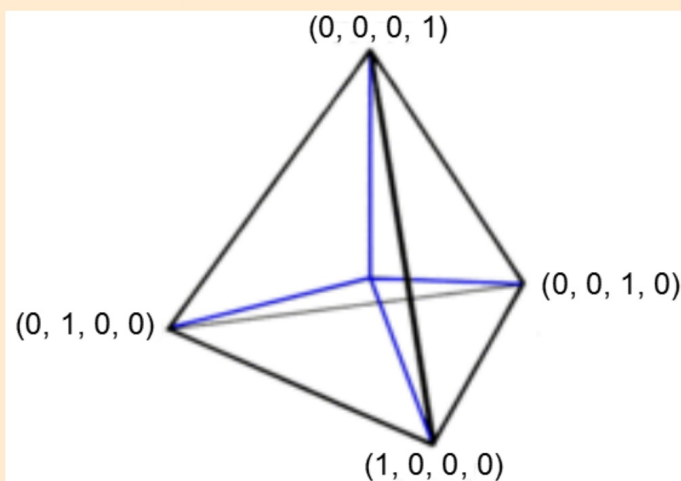
3) Vectors will be studied in **2-space**
(with options to explore 3-space).

How can we describe ***n* - space**?



Connections beyond 9th grade....

Barycentric coordinates in 3-dimensional space: four coordinates are related with one linear equation



**Connections
beyond MYP 9....**

**Imagine vectors
n-dimensional
space!**

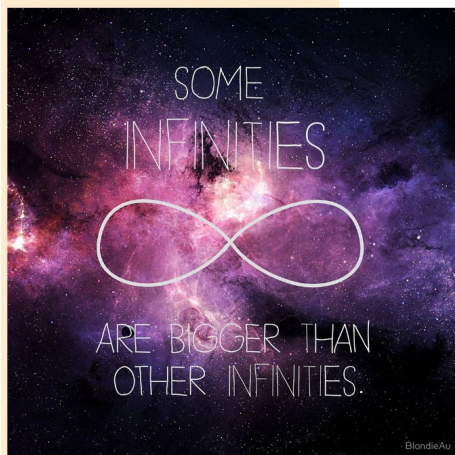
Vector Spaces; n-Dimensional Euclidean Space

Introduction The Space E^n consists of all **ordered** "n-tuples" of real or complex numbers

$$X = \begin{pmatrix} x_1 \\ x_2 \\ \vdots \\ x_n \end{pmatrix}, Y = \begin{pmatrix} y_1 \\ y_2 \\ \vdots \\ y_n \end{pmatrix}, V = \begin{pmatrix} x \\ y \\ z \end{pmatrix} \text{ (in } E^3 \text{), etc.,}$$

where $x_i, y_i,$ are scalars (real or complex numbers), called the *components* of X and Y , respectively. The qualification *ordered* means that, e.g.,

$$\begin{pmatrix} 1 \\ 2 \\ 3 \end{pmatrix} \neq \begin{pmatrix} 2 \\ 1 \\ 3 \end{pmatrix}.$$



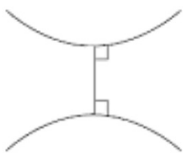
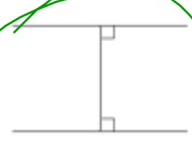
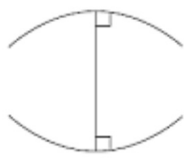
Kathleen Adebola Okikiolu

Professor of Mathematics at the University of California, San Diego (UCSD), Okikiolu **studies elliptical determinants to geometry**, which entails investigating the properties of **different dimensions in space**.


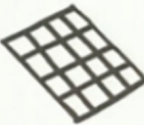


Specifically, Okikiolu has been **studying a number known as the "spectral determinant" of a drum, which results when you multiply all of the resonant frequencies of the drum together**. While the spectral determinant for two-dimensional drums is well-understood, many uncertainties surrounding mathematical three-dimensional spaces still exist.

Okikiolu explains: "The sound of a drum changes as its shape changes. In fact, listening to the drum very carefully tells me how to change its shape to make it sound like a round drum and when it sounds like a round drum, it is indeed round! But what will happen if the drum skin is three-dimensional? Or four?" Okikiolu and her collaborator, Victor Guillemin, are hoping that their research may eventually be applied to problems in quantum physics, which also involve resonant frequencies.

The three main types of modern geometry are:

		
Hyperbolic	Euclidean	Elliptic



			
1D	2D	3D	4D..

Kathleen Adebola Okikiolu

Okikiolu comes from a mathematical family: her father is a mathematician and inventor and her mother is a high school mathematics teacher. They met when her father left Nigeria to study mathematics at the same college in England where her mother was studying physics.

Okikiolu carried on the family tradition, earning her B.A. in Mathematics from Newnham College in England--the only all-women's college remaining at Cambridge University--before coming to the United States in 1987 to study for her doctorate at the University of California, Los Angeles (UCLA). There, she worked with two mentors, Sun-Yung (Alice) Chang and John Garnett, and was able to solve a problem concerning asymptotics of determinants of Toeplitz operators on the sphere and a conjecture of Peter Jones, characterizing subsets of rectifiable curves in Euclidean n -space.

After graduating in 1991, Kate went to Princeton University where she was an Instructor and an Assistant Professor, then spent one year at the Institute of Advanced Study. She obtained her resident U.S. visa just in time to apply for a National Science Foundation (NSF) post-doc, which she currently holds at the Massachusetts Institute of Technology (MIT). She makes frequent trips between MIT and UCSD, where both she and her partner hold positions.

Exercises....

Enjoy Homecoming Weekend!