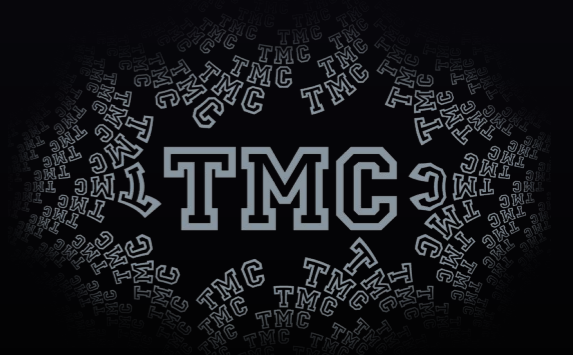


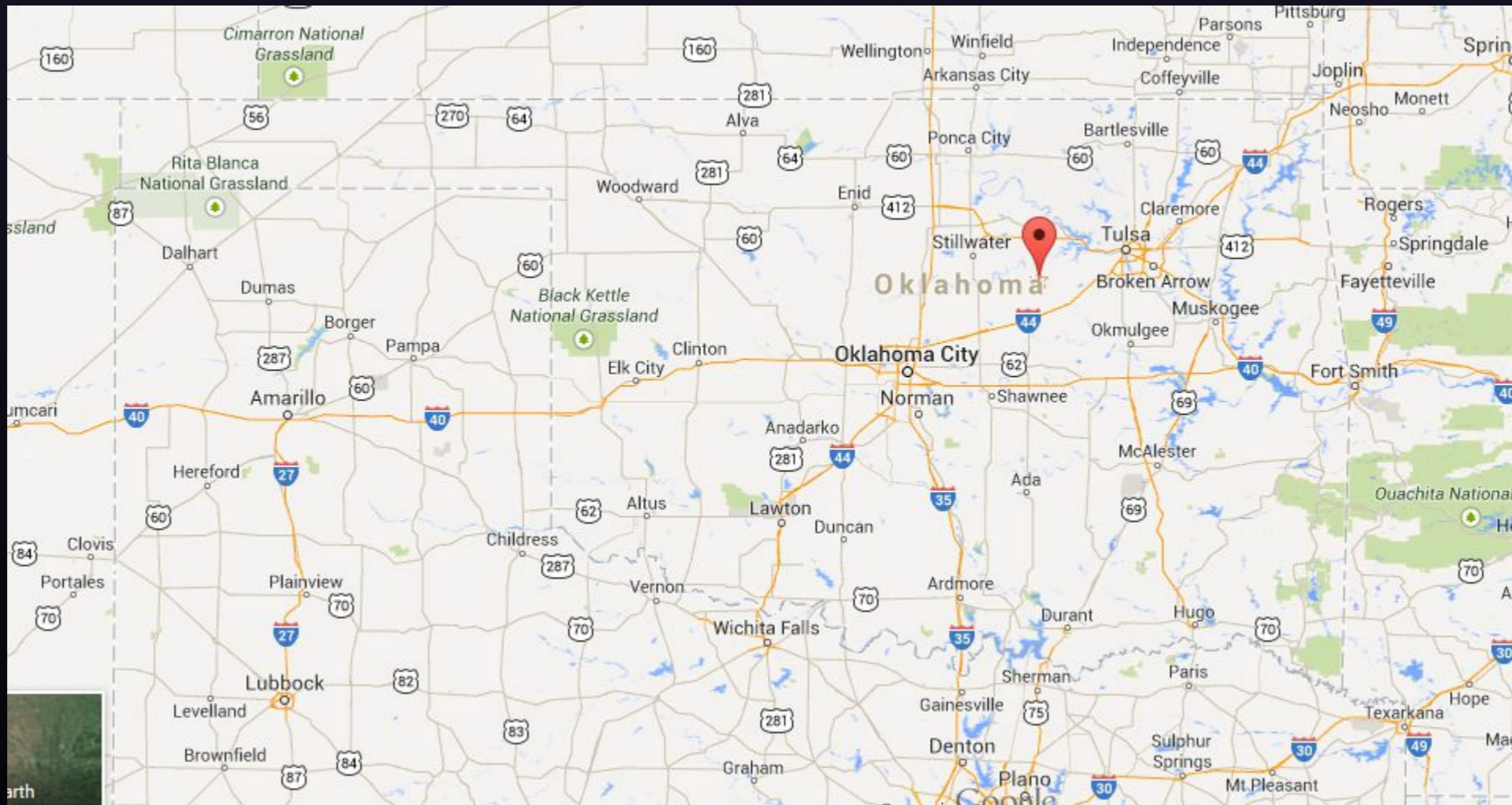
# Inspiring Mathematical Curiosity Through Hands-On Activities

Sarah Hagan  
@mathequalslove

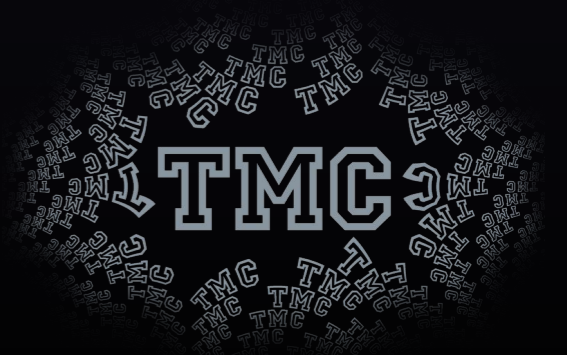


# Sarah Hagan

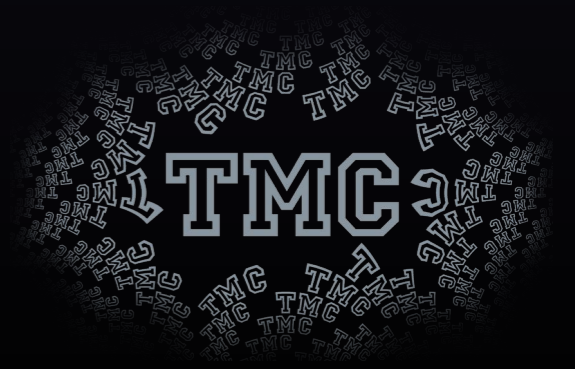
Drumright High School  
Drumright, OK



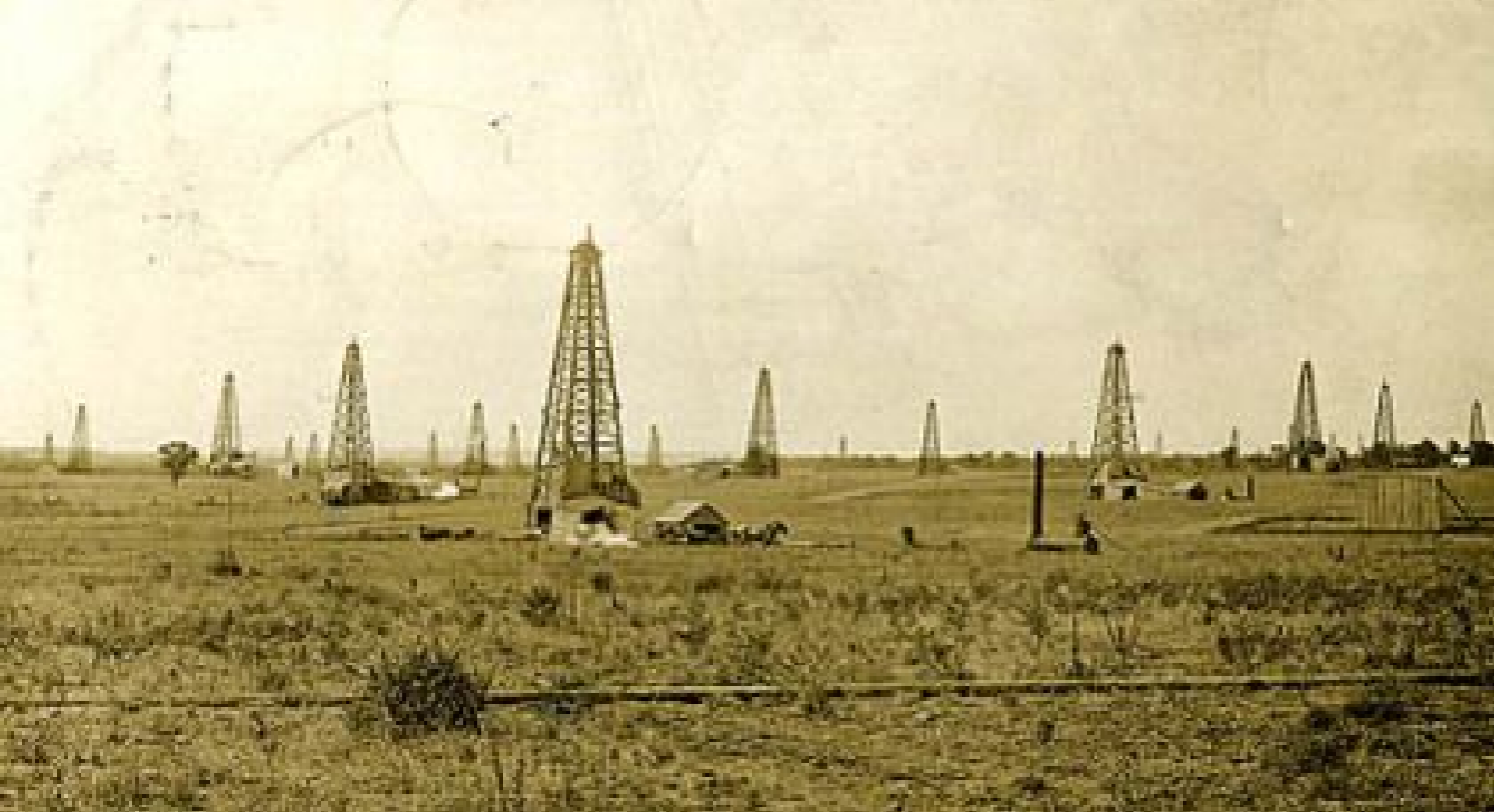














## My School

58% Caucasian  
2% African American  
0% Asian  
1% Hispanic  
39% Native American

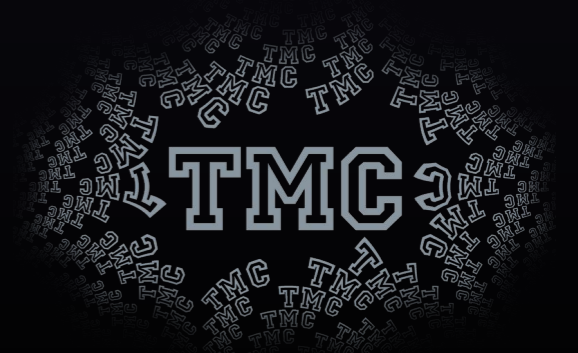
Class of '13 Dropout Rate: 22%  
Class of '13 Average ACT Score: 19.0  
Class of '13 College Bound Curriculum: 40.6%  
'10-'12 Out of State College Attendance: 0%  
'10-'12 College Attendance: 31.2%  
Remedial College Classes: 51.4%

80% of District Qualifies for Free/Reduced Lunch

District Population: 3,513  
High School Enrollment (9-12): 163  
District Enrollment (K-12): 599  
Number of Teachers at High School: 11.6

## Education Level for Adults 25+

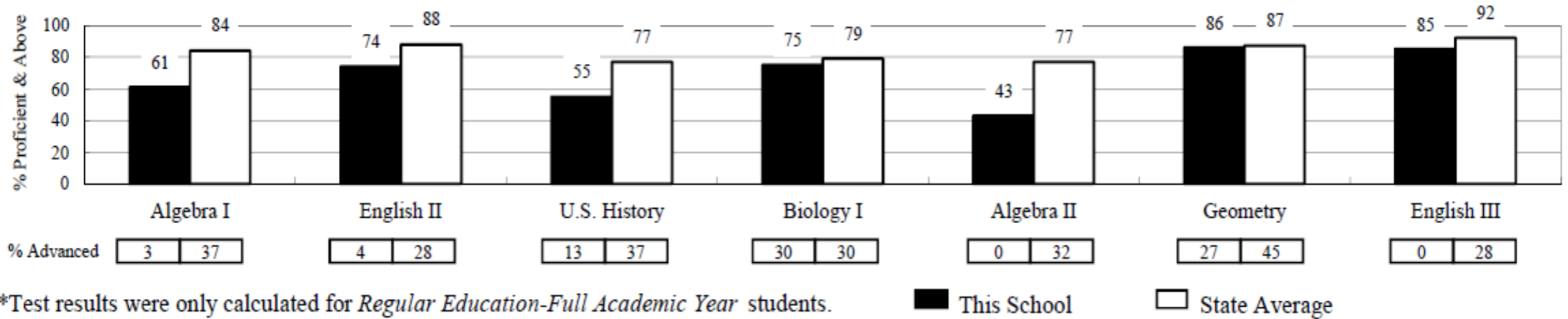
14% College Degree  
69% High School Diploma  
17% Less Than 12<sup>th</sup> Grade Education



# 2011-2012 Student Performance

## High School End-of-Instruction Tests\*

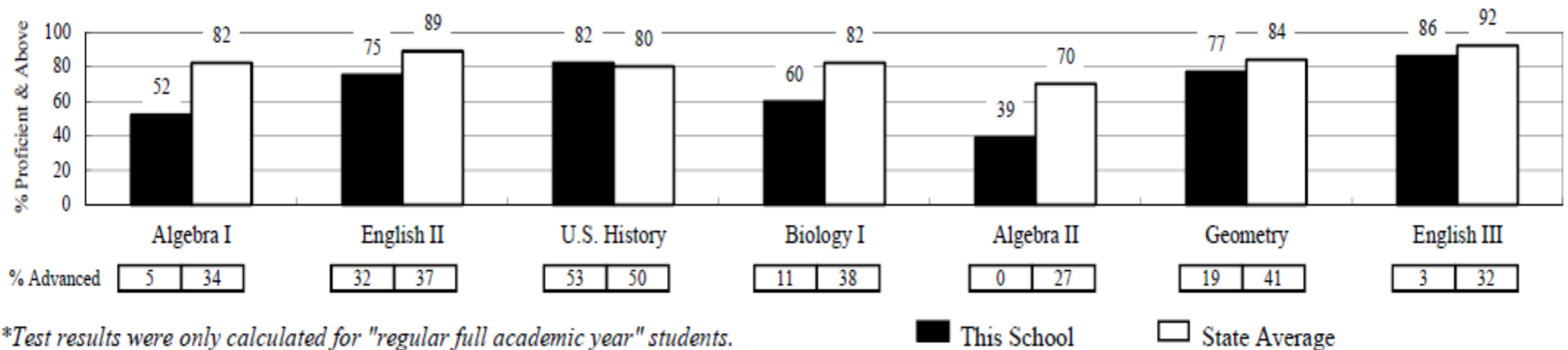
Results for non-high school students may be posted on the K-8 report card.



# 2010-2011 Student Performance

## High School End-of-Instruction Tests\*

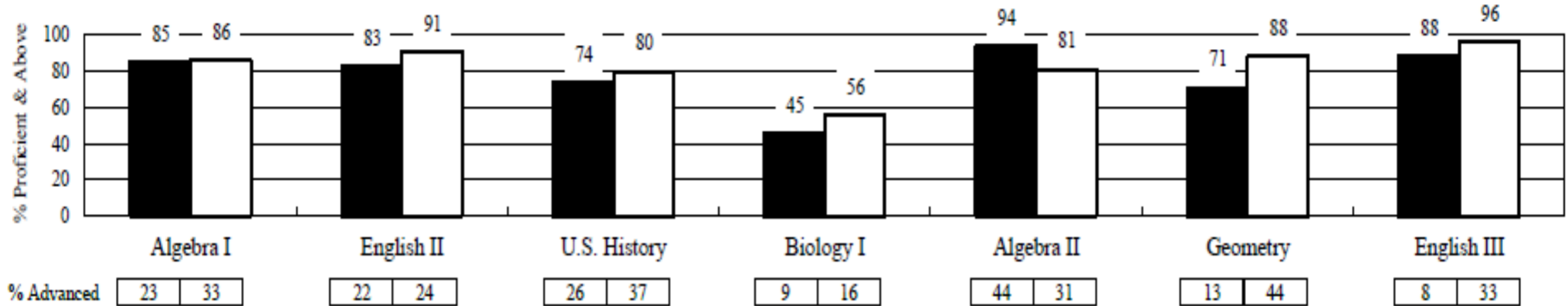
Results for non-high school students may be posted on the K-8 report card.



# 2012-2013 Student Performance

## High School End-of-Instruction Tests\*

Results for non-high school students may be posted on the K-8 report card.

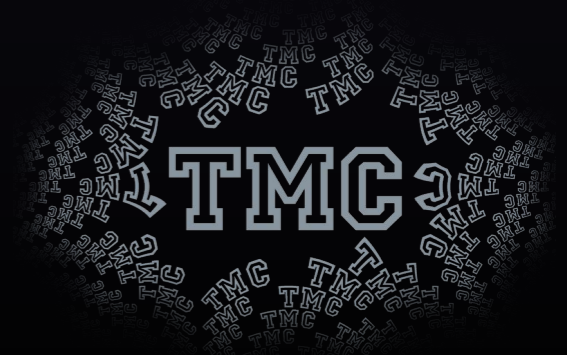


\*Test results were only calculated for *Regular Education-Full Academic Year* students.

■ This School

□ State Average

2012-2013: 12 Students Took Algebra 2 EOI  
 2013-2014: 32 Students Took Algebra 2 EOI





**When you enter this classroom...**

You are **Mathematicians.**

You are **EXPLORERS.**

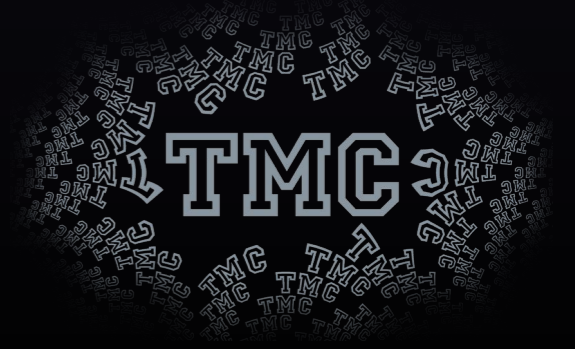
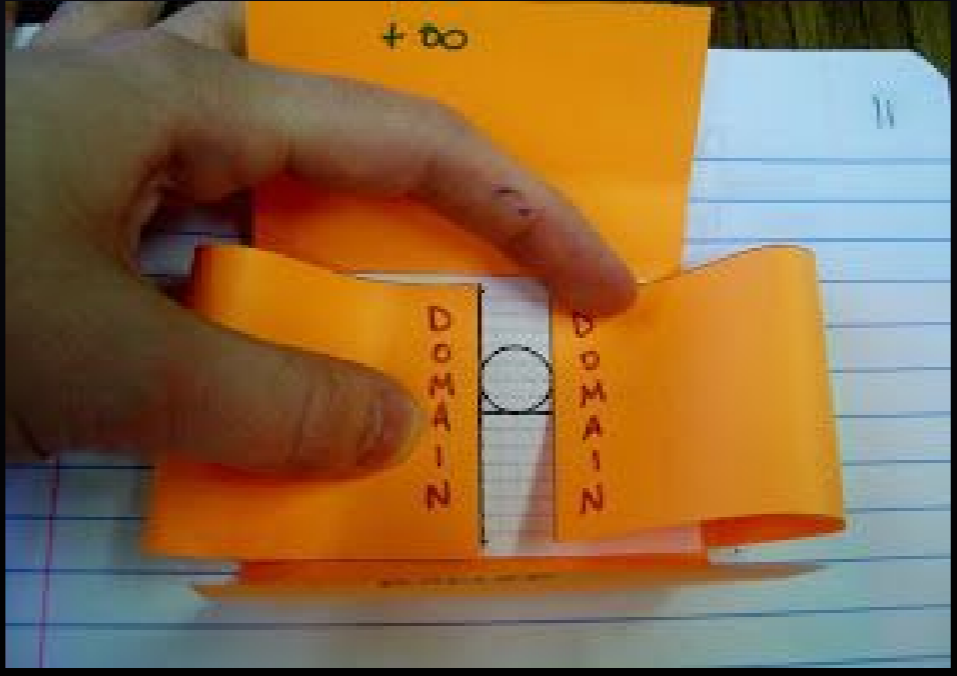
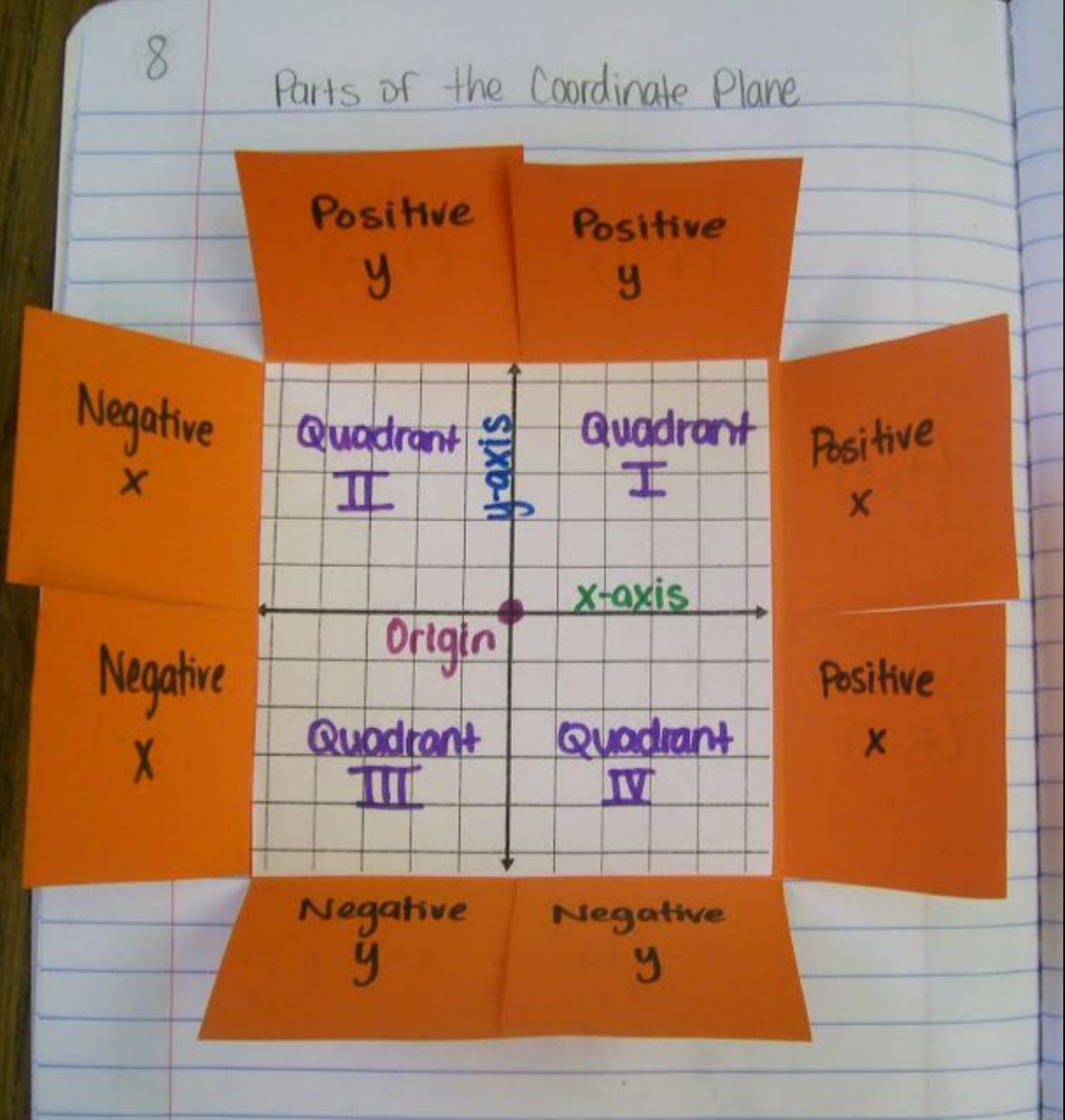
You are **Important.**

You are **Respected.**

You are **the reason**

**we are HERE!**

*Change is the only constant in this World*



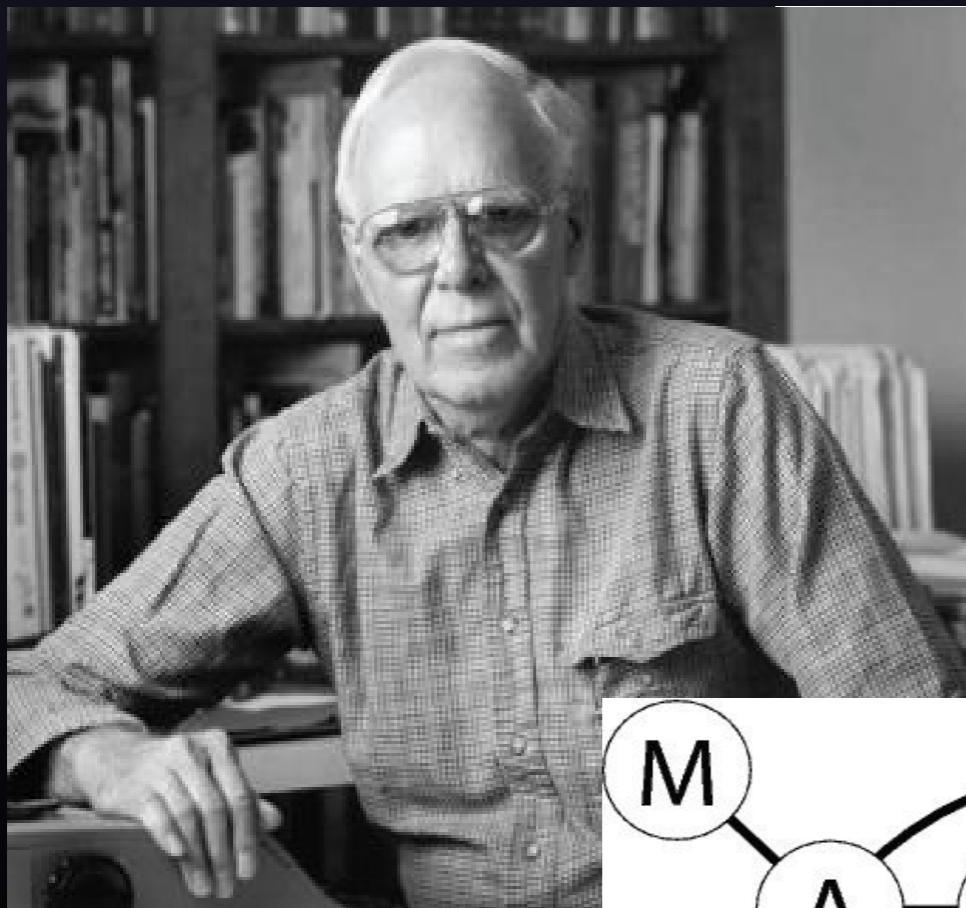




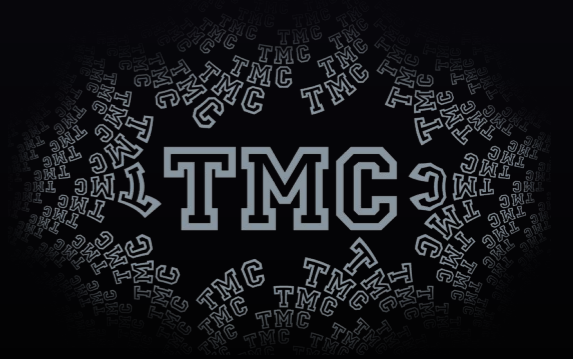
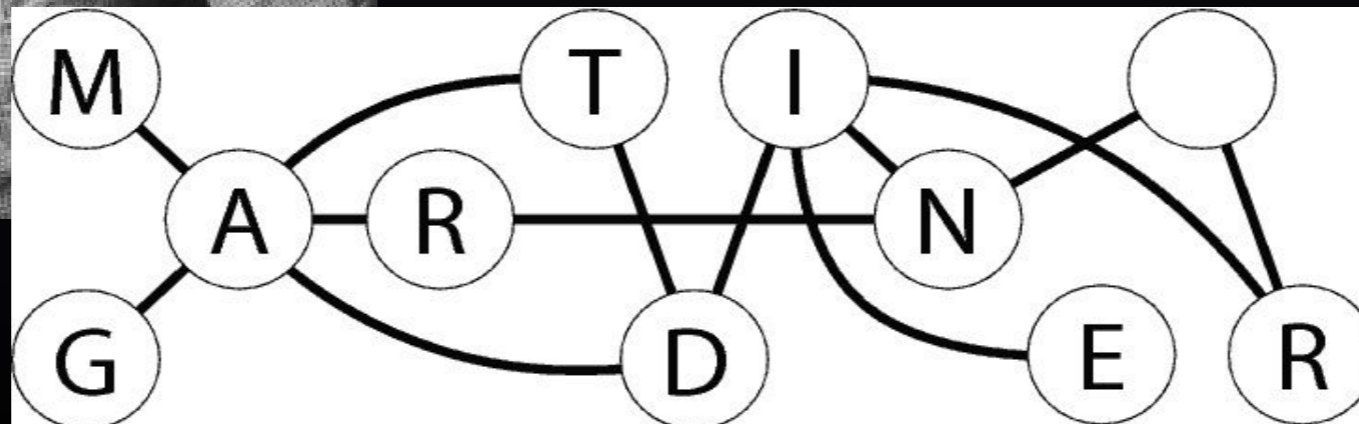




Martin Gardner  
Celebration  
of  
Mind



Gathering for Gardner

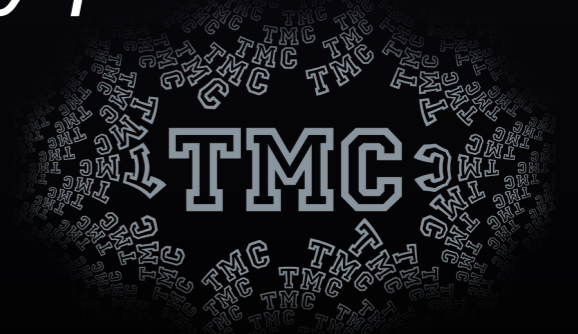


# Celebration of Mind Day

Held Annually on October 21<sup>st</sup>



*Would you join me in celebrating? Pretty please?*





Ideas for Celebrating:

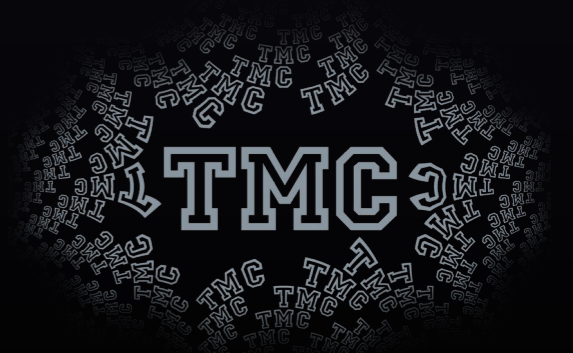
Mobius Strip Puzzles

Hexaflexagons

Mathematical Magic Tricks

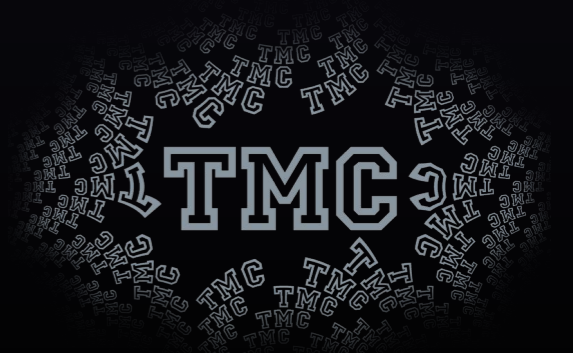
Other ideas:

[Celebrationofmind.org](http://Celebrationofmind.org)



What makes the mobius strip so special?

Draw on it and find out!



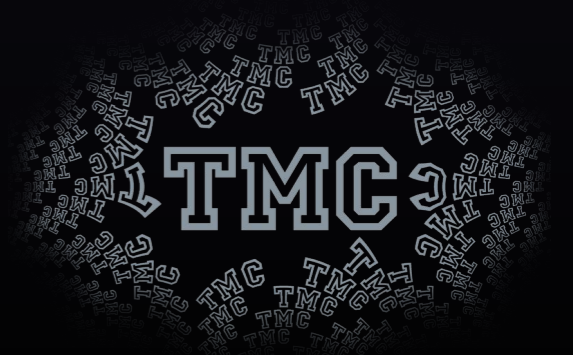


# Mobius Strip Exploration

What happens if you bisect the strip?

What if you twisted it twice before bisecting it?

Twisted it three times?

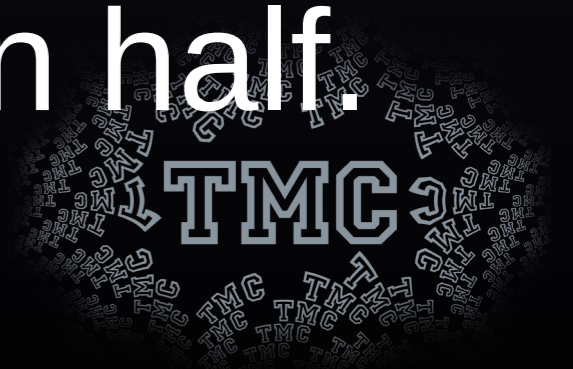


# Holiday Mobius Fun

Construct 2 mobius strips – one with a twist to the left & one with a twist to the right

Glue them together perpendicularly.

Bisect both mobius strips in half.

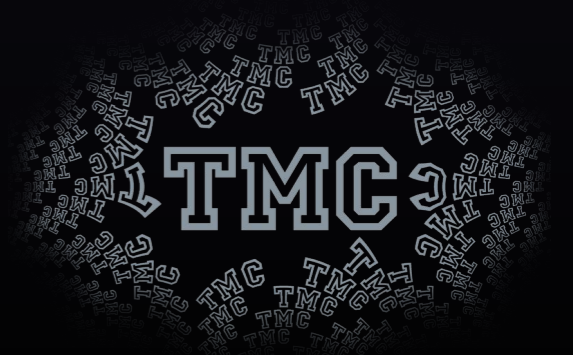
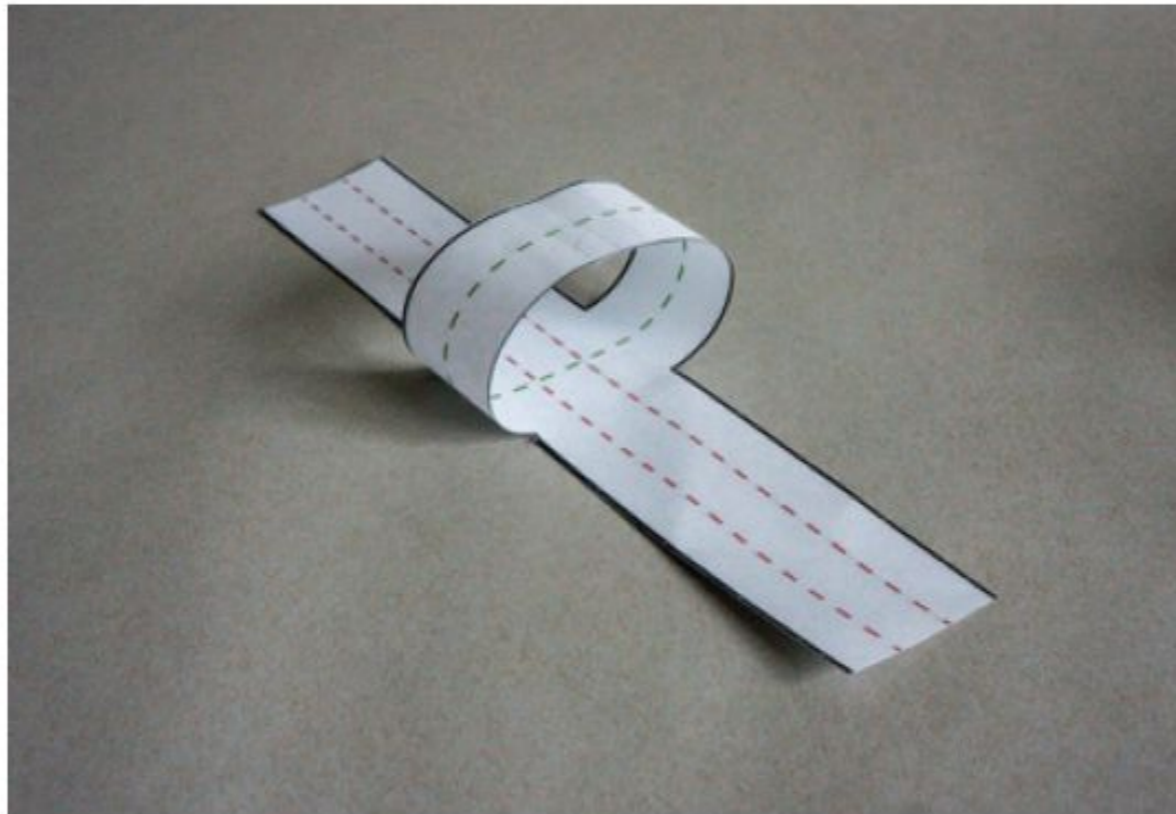




# Martin Gardner's Mobius Surprise Puzzle

## Step 1:

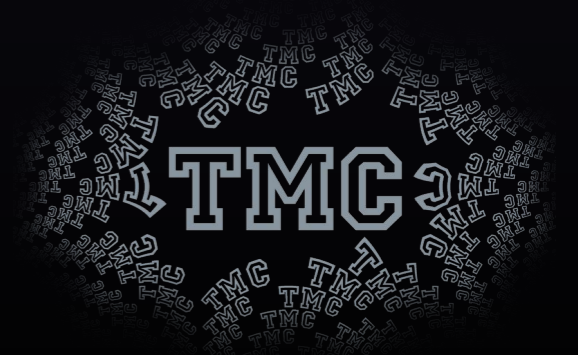
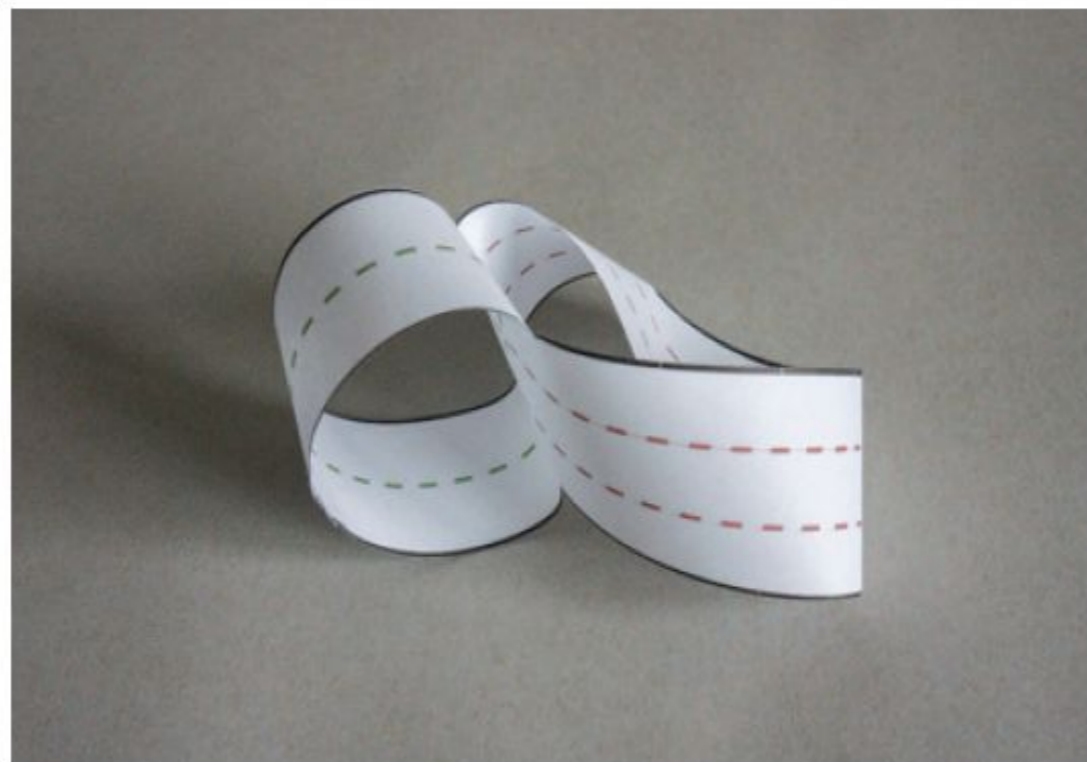
Cut out the big cross-shaped piece, following the heavy black outline. Tape the short ends labeled *A* together *without twisting them*, to make a loop, as shown:



# Martin Gardner's Mobius Surprise Puzzle

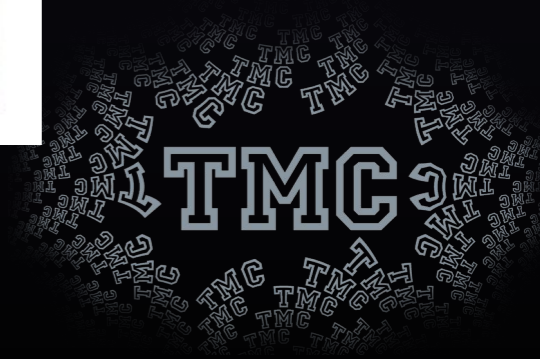
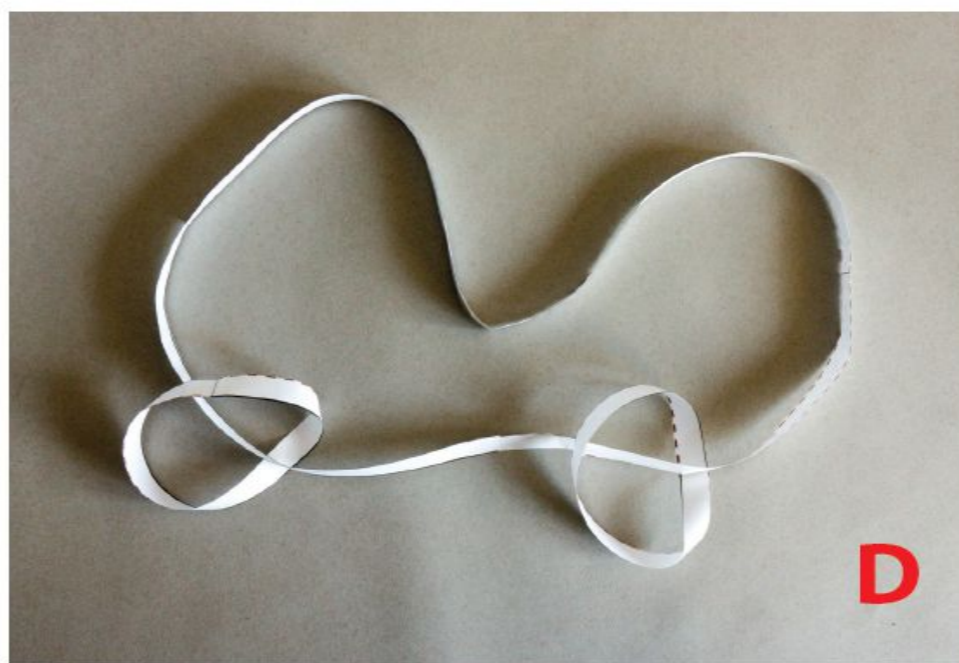
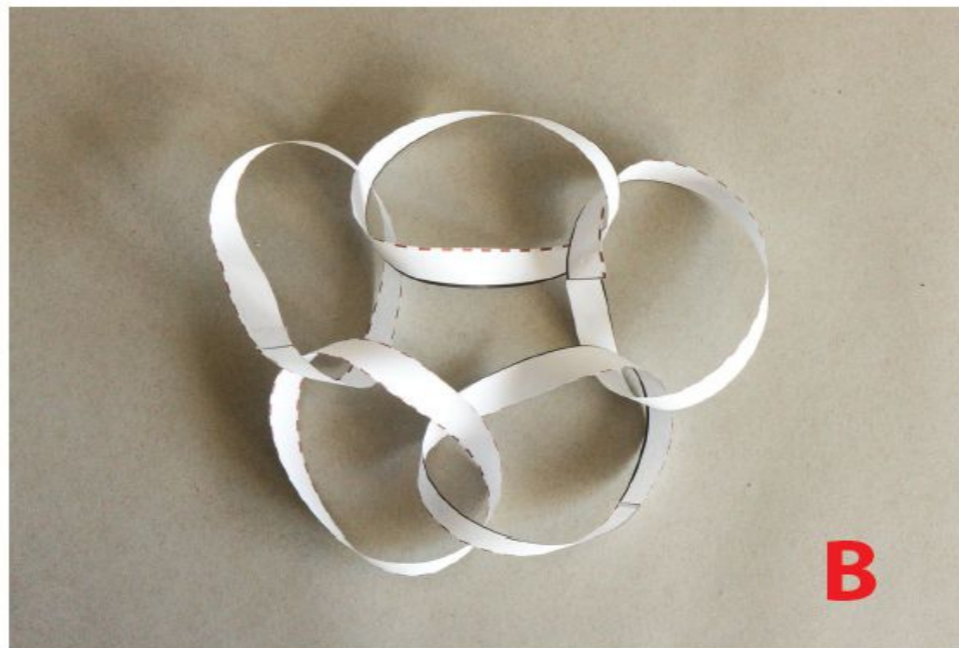
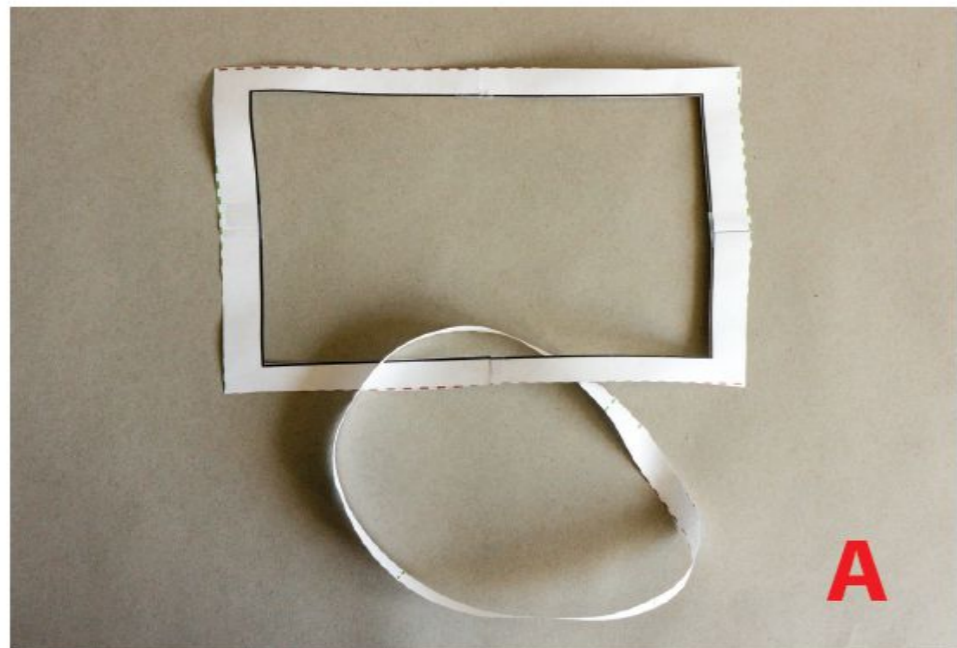
## Step 2:

Bend the two ends labeled *B* away from the A-loop you just made, *give one end a half-twist*, and tape them together. Here's what you'll get:





In a moment, we are going to cut along the small dashed lines (B) to trisect the long section.  
Then, we will bisect the short section (A) by cutting on the larger dashed line.







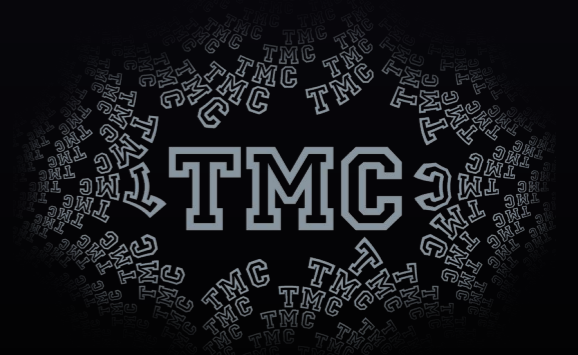
## Möbius Strip Stuff

by Vihart • 4 videos • 15,592 views • 9 likes • 18 minutes

[▶ Play all](#) [◀ Share](#) [👍 Like](#)

- |   |  |  |        |      |
|---|--|--|--------|------|
| 1 |   | Möbius Music Box   | Vihart | 1:52 |
| 2 |   | How to eat Candy Buttons like a Recreational Mathemusician | Vihart | 4:47 |
| 3 |   | Wind and Mr. Ug  | Vihart | 7:15 |
| 4 |  | Math Improv: Fruit by the Foot                             | Vihart | 4:52 |

# Möbius Strip Videos – Vi Hart







### Hexaflexagons

by **Vihart** • 1 year ago • 5,795,614 views

Hooraaaaay flexagons! Happy October. Here's part 2: <http://youtu.be/paQ10P0rZh8>  
Hexaflexagon Safety Guide: ...

CC



### Hexaflexagon Safety Guide

by **Vihart** • 1 year ago • 726,360 views

Don't let a flexigatastrophe happen to you! Flex Mex: <http://youtu.be/GTwrVAbV56o>  
Happy Hexaflexagon Month, in honor of Martin ...

HD CC



### Flex Mex

by **Vihart** • 1 year ago • 1,534,820 views

Might as well. My personal website, which you might like: <http://vihart.com>.

HD CC



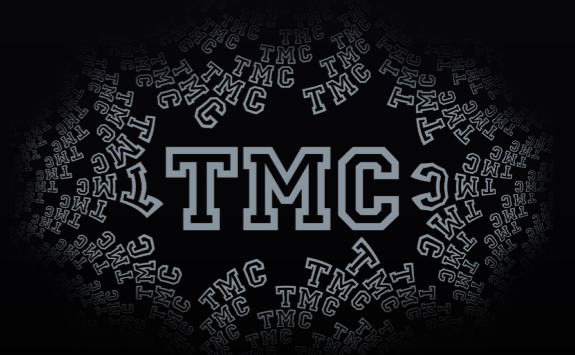
### Hexaflexagons 2

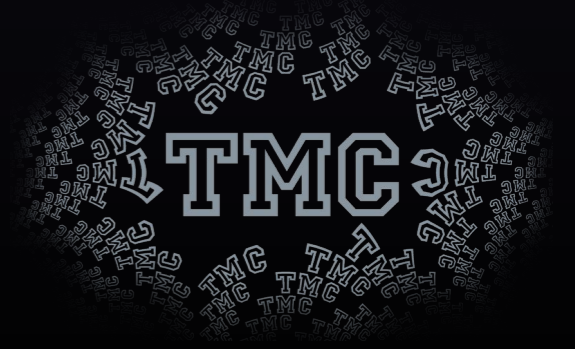
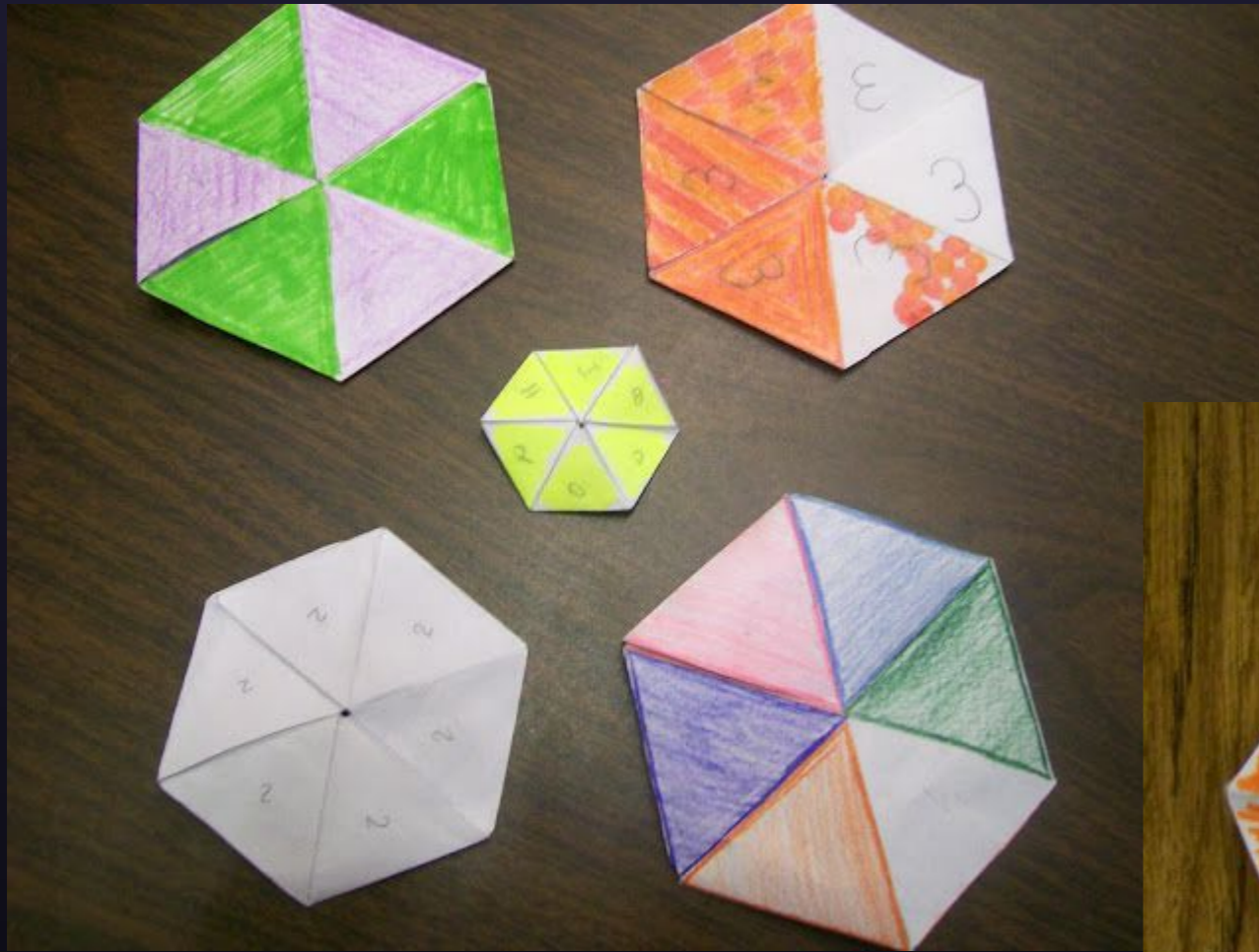
by **Vihart** • 1 year ago • 993,681 views

Happy October, Month of the Hexaflexagon! Part 1: <http://youtu.be/MIVlegSt81k>  
Hexaflexagon Safety Guide: ...

HD CC

# Vi Hart – Hexaflexagon Videos

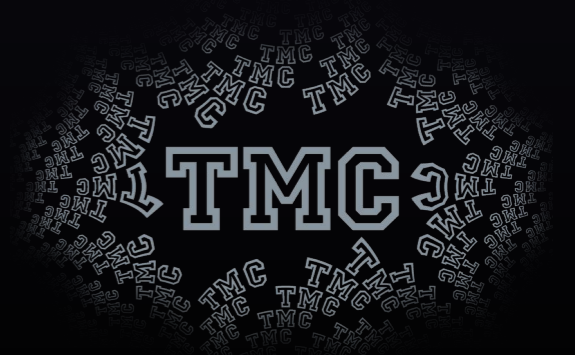






“The day after we made our hexaflexagons, one of my students came back to tell me that she had stayed up late watching all of Vi Hart's videos. Her words: "Math is fun!"

To those of you who will say that I wasted a day of instruction with my Algebra 1 and Algebra 2 students, I would beg to differ. I wasn't hired just to teach math. I was hired to change lives, to inspire students. I have a group of Algebra 1 students from last year who come to visit me multiple times a week. When they realized it was Hexaflexagon Day, they almost all told me that they still had their hexaflexagon from last year. This is something they will remember for a long time. I can't say the same about worksheet or a quiz.”







TMC



# Teach Geometry?

Have your students construct their own hexaflexagon template with compass and straight edge!

<http://www.instructables.com/id/How-to-make-a-hexaflexagon/>

