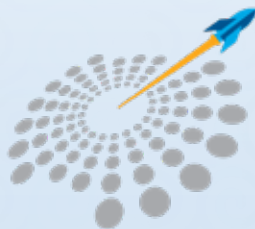




Welcome!

The M in STEM: Math in Everyday Life



MILLION GIRLS MOONSHOT

NGCP 

20 YEARS TRANSFORMING STEM

The M in STEM: Math in Everyday Life

April 20, 2022



NGCP Vision

The vision of the National Girls Collaborative Project is to **support and create STEM experiences** that are as **diverse as the world we live in.**



Our Goals

Connect + Create + Collaborate

1

Maximize access

to shared resources within projects, and with public and private sector organizations and institutions.

2

Strengthen capacity

of existing and evolving projects by sharing exemplary practice, research, and program models, outcomes, and products.

3

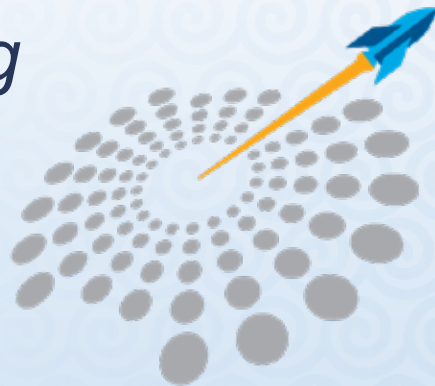
Create the tipping point

for gender equity in STEM by using the leverage of a network and the collaboration of individual girl-serving STEM programs.



Million Girls Moonshot

Inspire and prepare the next generation of innovators by engaging one million more girls in STEM learning opportunities through afterschool and summer programs over the next five years.

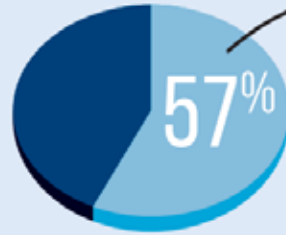


MILLION GIRLS MOONSHOT

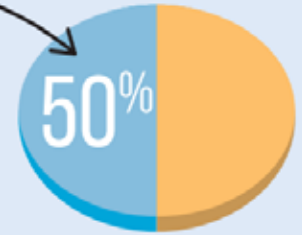


State of Girls and Women in STEM

<https://ngcproject.org/resources/state-girls-and-women-stem>



Women earn 57% of bachelor's degrees in all fields



Women earn 50% of bachelor's degrees in S&E

Women earn a majority of bachelor's degrees in psychology, biological sciences, and social sciences, but they earn only



in Engineering



in Computer Science



in Physics

Women, Minorities, and Persons with Disabilities in Science and Engineering (NSF, 2021)

Girls' and young women's achievement
in mathematics and science **is on par**
with that of boys and young men.



Elementary and Secondary STEM Education (2021)



“

Finding *math moments* in everyday life.

”



Dr. Emille Davie Lawrence

Math is Play!

University of San Francisco

- Term Associate Professor and Chair in the Department of Mathematics and Statistics
- Black Scholars Program Director

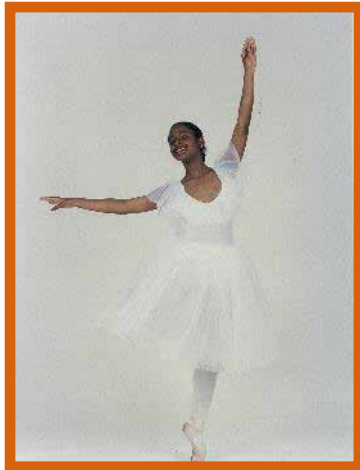
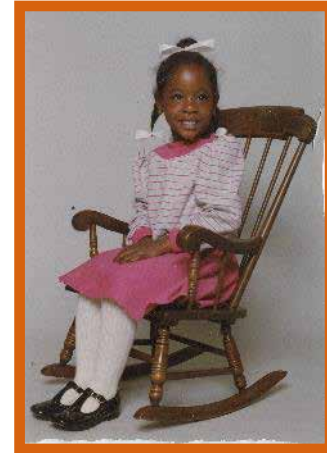




MATH IS PLAY!

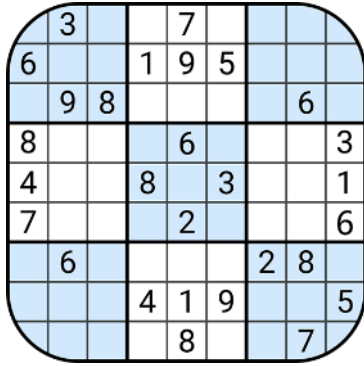
Emille Davie Lawrence, PhD
MGM + NGCP: The M in STEM

A LITTLE ABOUT ME





MATH IS PLAY!



Sudoku



2048



Poker

MATH IS PLAY!

What games do you have in your afterschool space that utilize math?

Strategy Games



Geometry-related games



SET!

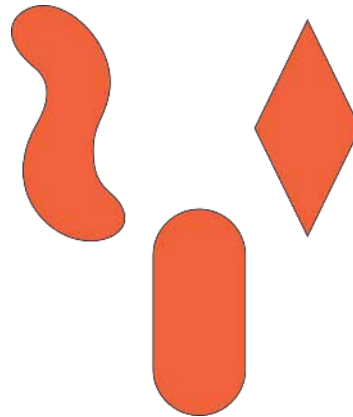
Object

Identify more SETS than the other players

SET

3 cards which are either all the **SAME** or all **DIFFERENT** in each of the following categories

Shape



SET!

Object

Identify more SETS than the other players

SET

3 cards which are either all the **SAME** or all **DIFFERENT** in each of the following categories

Color

Green

Purple

Red

SET!

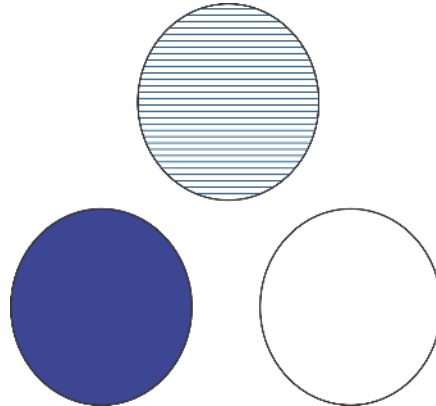
Object

Identify more SETS than the other players

SET

3 cards which are either all the **SAME** or all **DIFFERENT** in each of the following categories

Fill



SET!

Object

Identify more SETS than the other players

SET

3 cards which are either all the **SAME** or all **DIFFERENT**
in each of the following categories

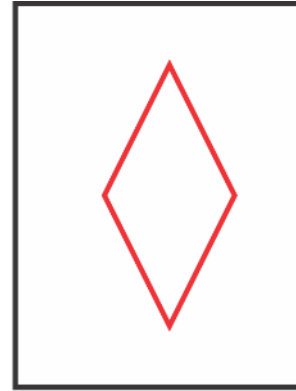
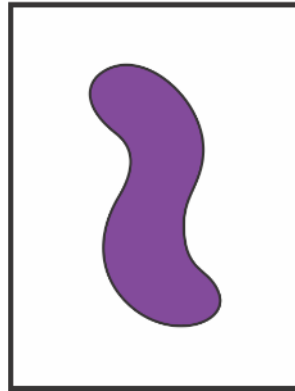
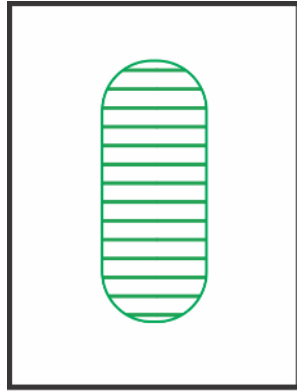
Number of
Objects

1

2

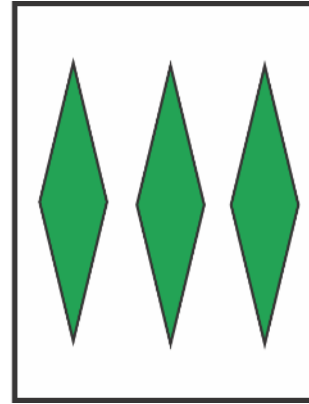
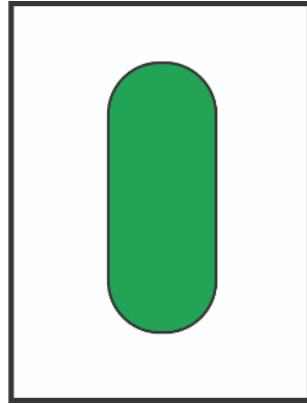
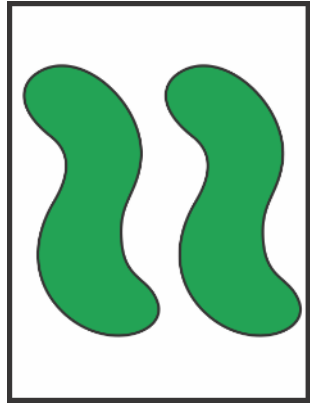
3

EXAMPLES OF SETS



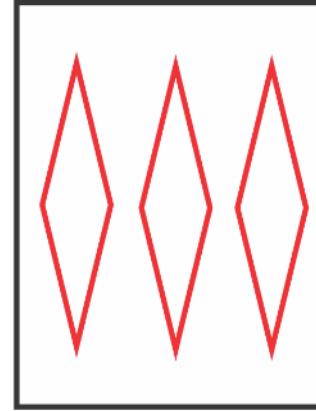
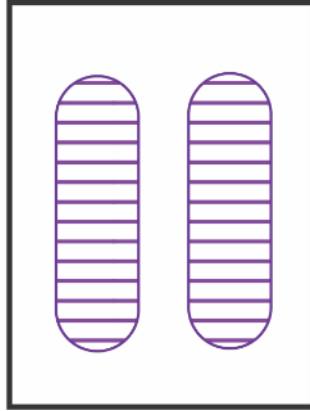
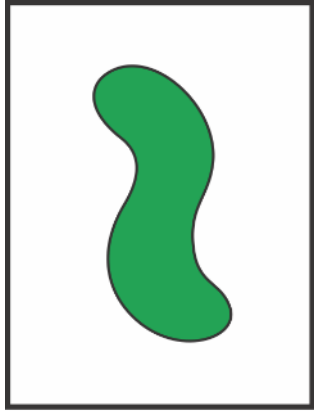
Shape = different
Color = different
Fill = different
Number = same

EXAMPLES OF SETS



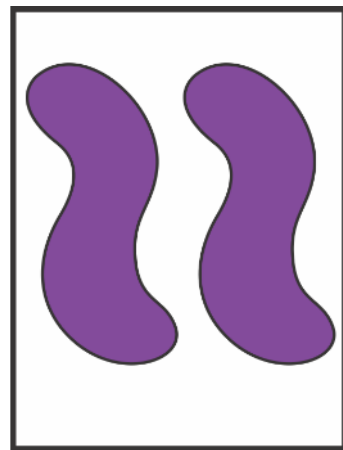
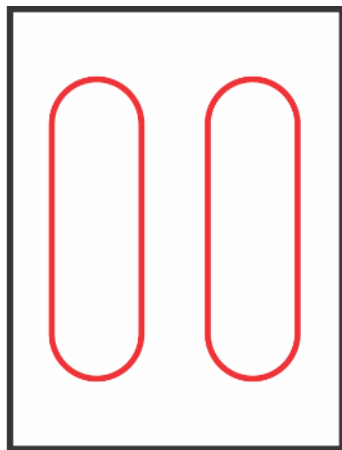
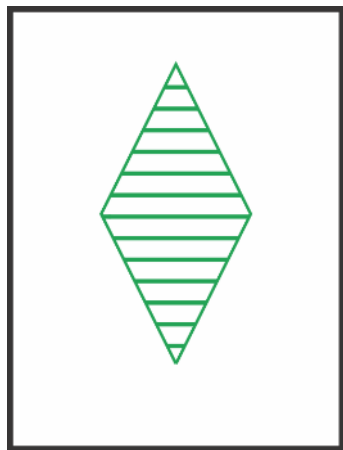
Shape = different
Color = same
Fill = same
Number = different

EXAMPLES OF SETS

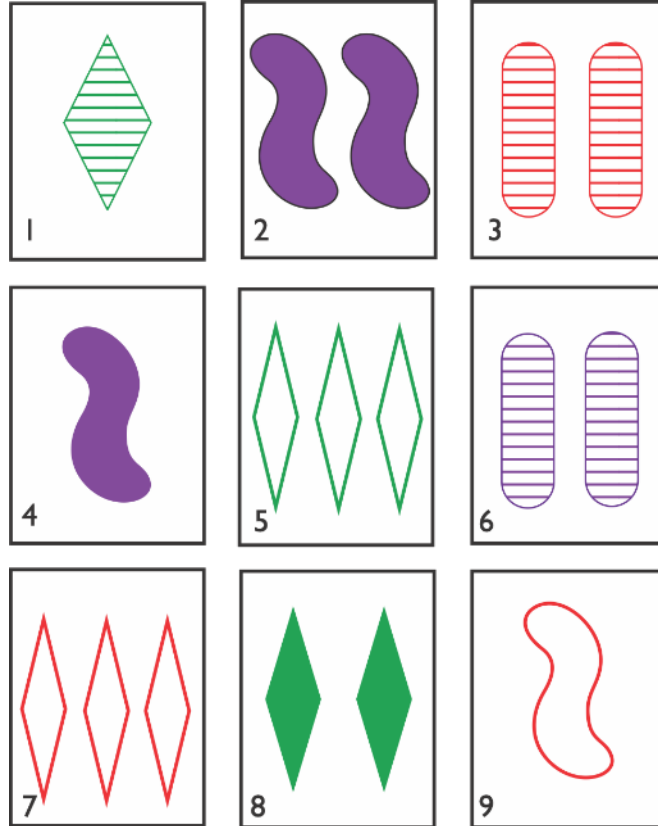


Shape = different
Color = different
Fill = different
Number = different

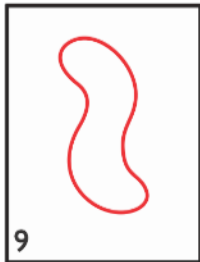
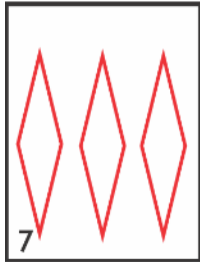
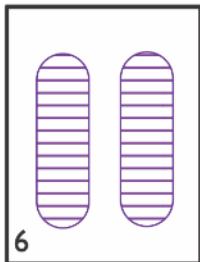
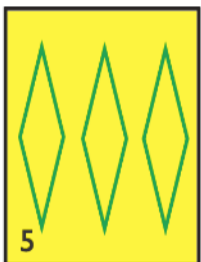
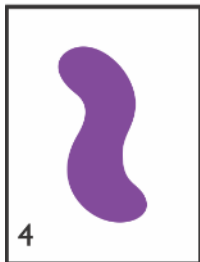
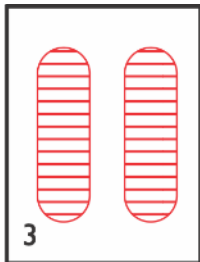
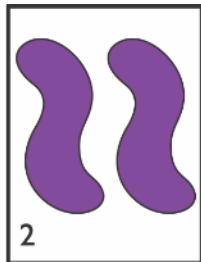
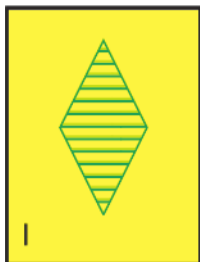
A NON-EXAMPLE



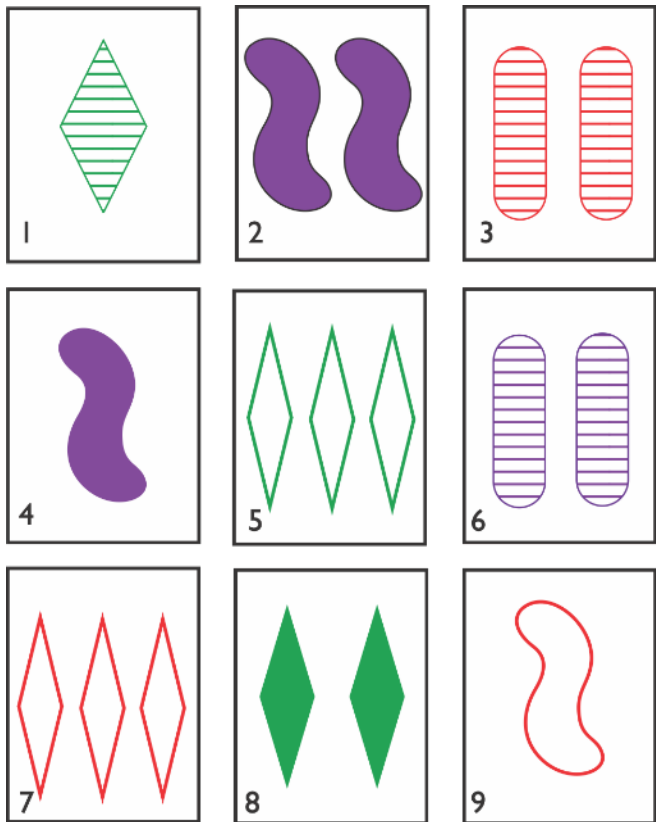
HOW MANY CAN YOU FIND?



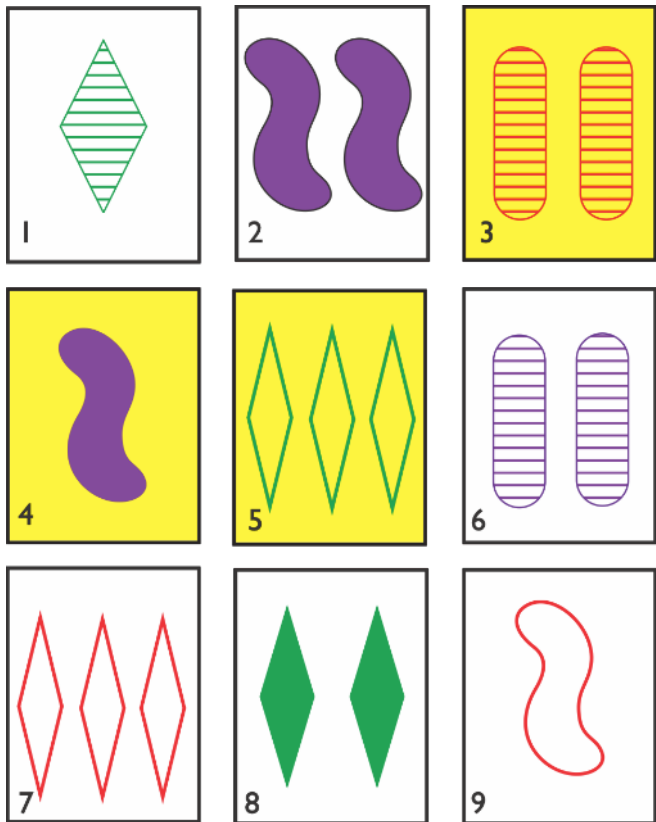
HOW MANY CAN YOU FIND?



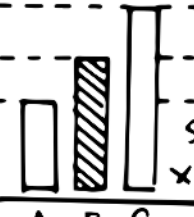
HOW MANY CAN YOU FIND?



HOW MANY CAN YOU FIND?

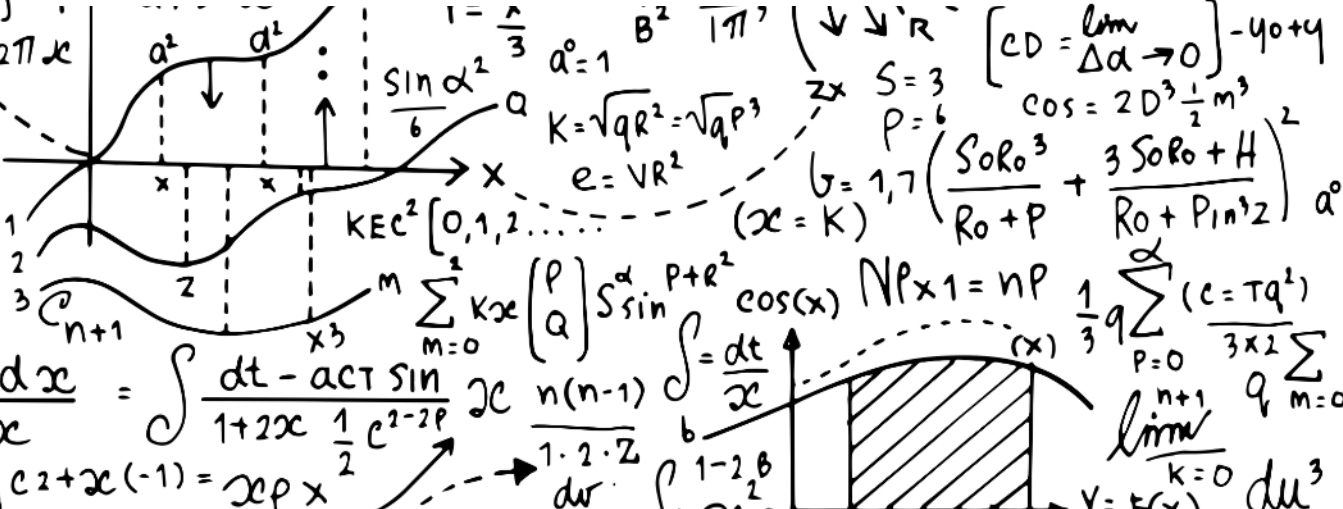


**WHAT ARE THE
TAKE-AWAYS?**

$-\sum_{k=0}^m kx^e$ $\leftarrow \sin x \cos x \sin k\theta^2$
 $P(x=k) = \binom{n}{k} p^k q^{n-k}$ $(t = \cos x)$ $\sqrt{\frac{3}{2}} x = \cos i + \tan x \frac{1}{4} q$
 $\lim_{x \rightarrow 0} \frac{1}{x^2} 12x$ $S = x^2$ $(n+1) \lim_{x \rightarrow 0} x^{-5}$ $y = x + D$
 $E(x) = \sum_{x=y}^B ne^2 - p(x^2 - p)(x = k^2)$ $\sum_{x=0}^B (x=2)$ $np \times 1 = \alpha$


MATH IS MORE THAN THIS!

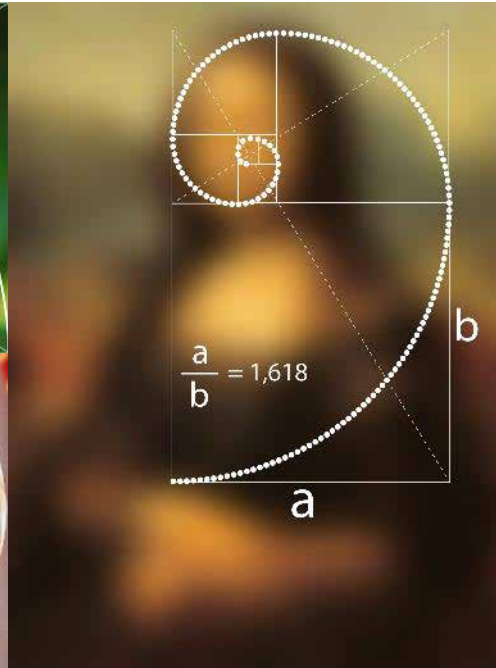
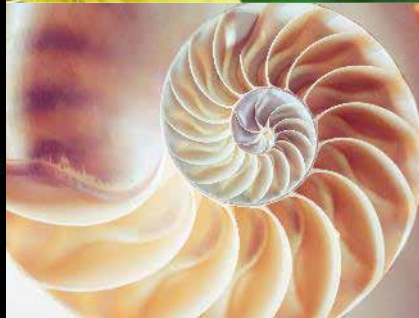
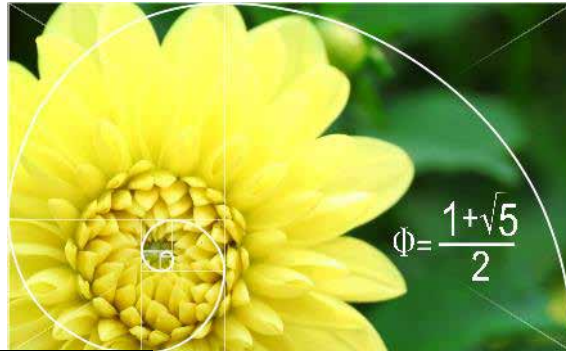
$\lim_{x \rightarrow 0} \frac{1}{x^2} = 1$ $\frac{a^n}{b^k}$ $\lim_{x \rightarrow 0} \sqrt{2x \cos i} - \sqrt{2x - u}$ $\lim_{x \rightarrow 0} \sqrt{2x}$ $\frac{\pi}{2} \rightarrow \frac{\pi}{3} \rightarrow \frac{\pi}{4} \rightarrow \frac{\pi}{4}$
 $12\pi^3 = \frac{\sin x}{2\pi x}$ $\frac{a^2}{b^k}$ $\lim_{x \rightarrow 0} \sqrt{2x \cos i} - \sqrt{2x - u}$ $\lim_{x \rightarrow 0} \sqrt{2x}$ $\frac{\pi}{2} \rightarrow \frac{\pi}{3} \rightarrow \frac{\pi}{4} \rightarrow \frac{\pi}{4}$
 $\sqrt{e} = 5x^2 \tan$ $\frac{1}{2} = \frac{a^2}{3}$ $B^2 = 1\pi^2$ $\left[CD = \lim_{\Delta \alpha \rightarrow 0} \right] -40 + 4$
 $\log \frac{x}{y} = \log 2$ $K = \sqrt{qR^2} = \sqrt{qP^3}$ $S = 3$ $\cos = 2D^3 \frac{1}{2} m^3$
 $(\cos x) = \cos(2)$ $e = VR^2$ $P = 6$ $\left(\frac{S_0 R_0^3}{R_0 + P} + \frac{3 S_0 R_0 + H}{R_0 + P \sin^2 2} \right) a^0$
 $\int \cos x dx = \int \frac{dt - a \cos t \sin}{1 + 2x} dx$ $\sum_{m=0}^2 kx^e$ $\cos(x) Np \times 1 = np$ $\frac{1}{3} \sum_{p=0}^2 (c = Tq^4)$
 $\int \frac{dt - a \cos t \sin}{1 + 2x} dx$ $\frac{1}{2} \sum_{m=0}^2 \frac{1}{3 \times 2}$ $\lim_{k \rightarrow 0} \frac{1}{k} \sum_{m=0}^2$
 $= np \sum_{x=1}^2 \lim_{x \rightarrow 0} (c^2 + x(-1)) = x^p x$ $\frac{1 \cdot 2 \cdot 3}{2}$ $\frac{1}{2} \sum_{m=0}^2$ $\lim_{k \rightarrow 0} \frac{1}{k} \sum_{m=0}^2$



How else can you bring math into your programming?

Fibonacci sequence investigation

1, 1, 2, 3, 5, 8, 13, 21, 34, 55, ...



How else can you bring math into your programming?

Create with STEM-based toys

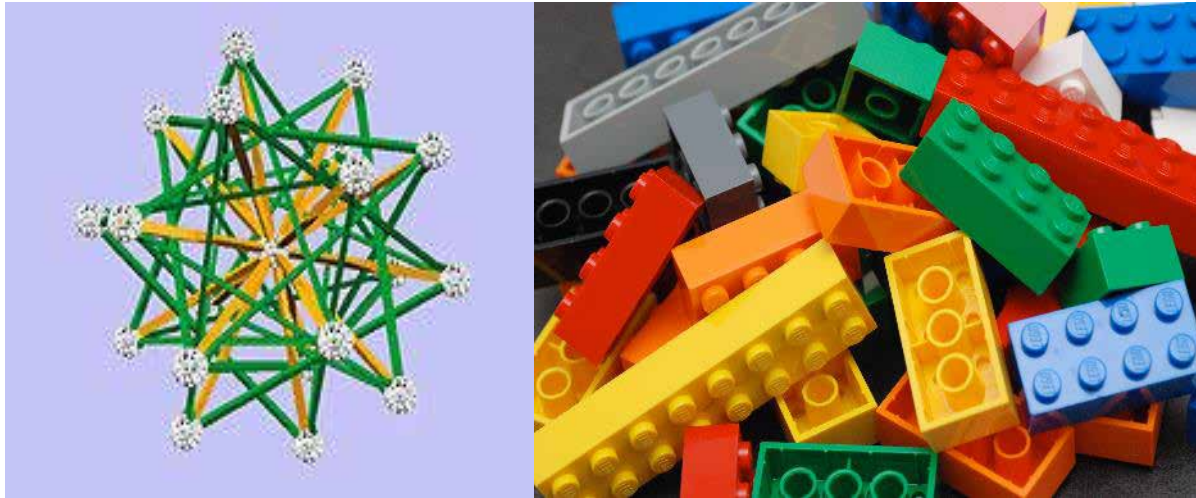


Image Credit: <https://en.wikipedia.org/wiki/Zome>, <https://en.wikipedia.org/wiki/Lego>

THANK YOU

The image features the words "THANK YOU" rendered in a 3D, blocky font. Each letter is a separate cube with a different color: 'T' is yellow, 'H' is blue, 'A' is orange, 'N' is red, 'K' is yellow, 'Y' is blue, 'O' is green, and 'U' is red. The cubes are arranged in a horizontal line on a white surface, casting soft shadows.

Finding Playful Math Moments

- Start with content you know and love, and that girls love too
- Recognize small math moments throughout the day
- Encourage, or even challenge, youth to call out math moments
- Make math moments a part of your larger program
- Engage families in math moments with their children



Photo by Allison Shelley/The Verbatim Agency for EDUimages





MILLION GIRLS MOONSHOT

Q & A

We'll take questions from the chat and from people using the “hand raise” feature.

Upcoming NGCP Events

Girls STEAM Ahead with NASA Free Resources

May 3, 2022 at 11:00 AM Pacific / 2:00 PM Eastern



VIEWSPACE

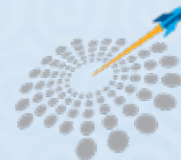


STEAM Resources for Libraries

May 17, 2022 at 11:00 AM Pacific / 2:00 PM Eastern

The M in STEM: Making Math Meaningful

May 18, 2022 at 11:00 AM Pacific / 2:00 PM Eastern



MILLION GIRLS MOONSHOT



National Girls
Collaborative Project



Thank you!

ngcproject.org

