

# CREATION, DISCOVERY AND COMPUTATION WITH CURIOSITY DRIVEN MATHEMATICS

YONI NAZARATHY

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ONE  
ON  
EPSILON

# ONE ON EPSILON

## DRIVING CURIOSITY AND NURTURING CONNECTION

### OUR CONTENT TEAM:



1st

Yousuf Marvi



1st

Inna Lukyanenko



Yoni Nazarathy



1st

Phillip Isaac



1st

Coco Bu



1st

Miriam Redding

**BUZZ  
HUNTER**

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October 10th -17th, 2017  
Register NOW!

# GLOBAL MATH WEEK



REGISTER NOW

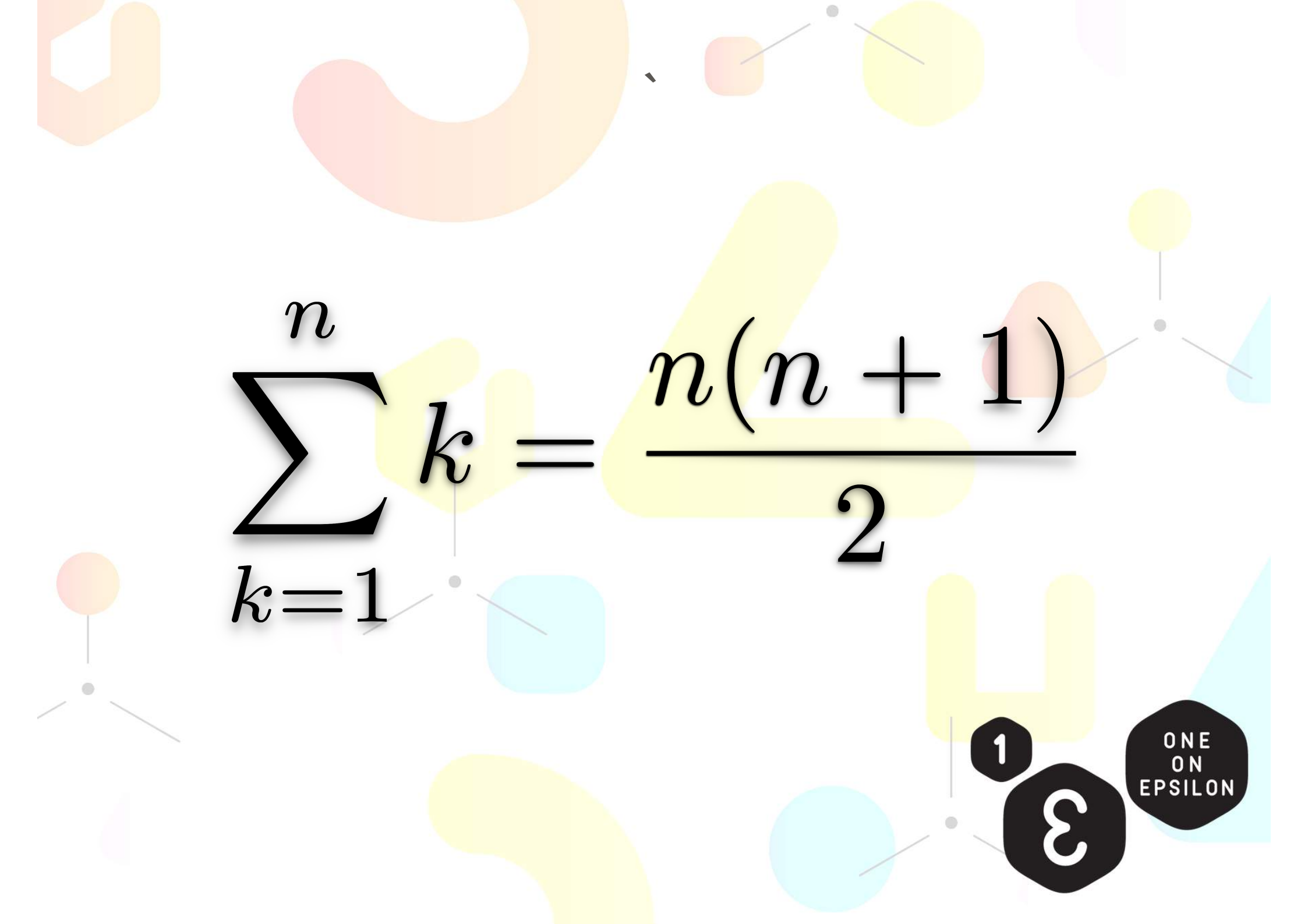
The seven principles of Natural Math



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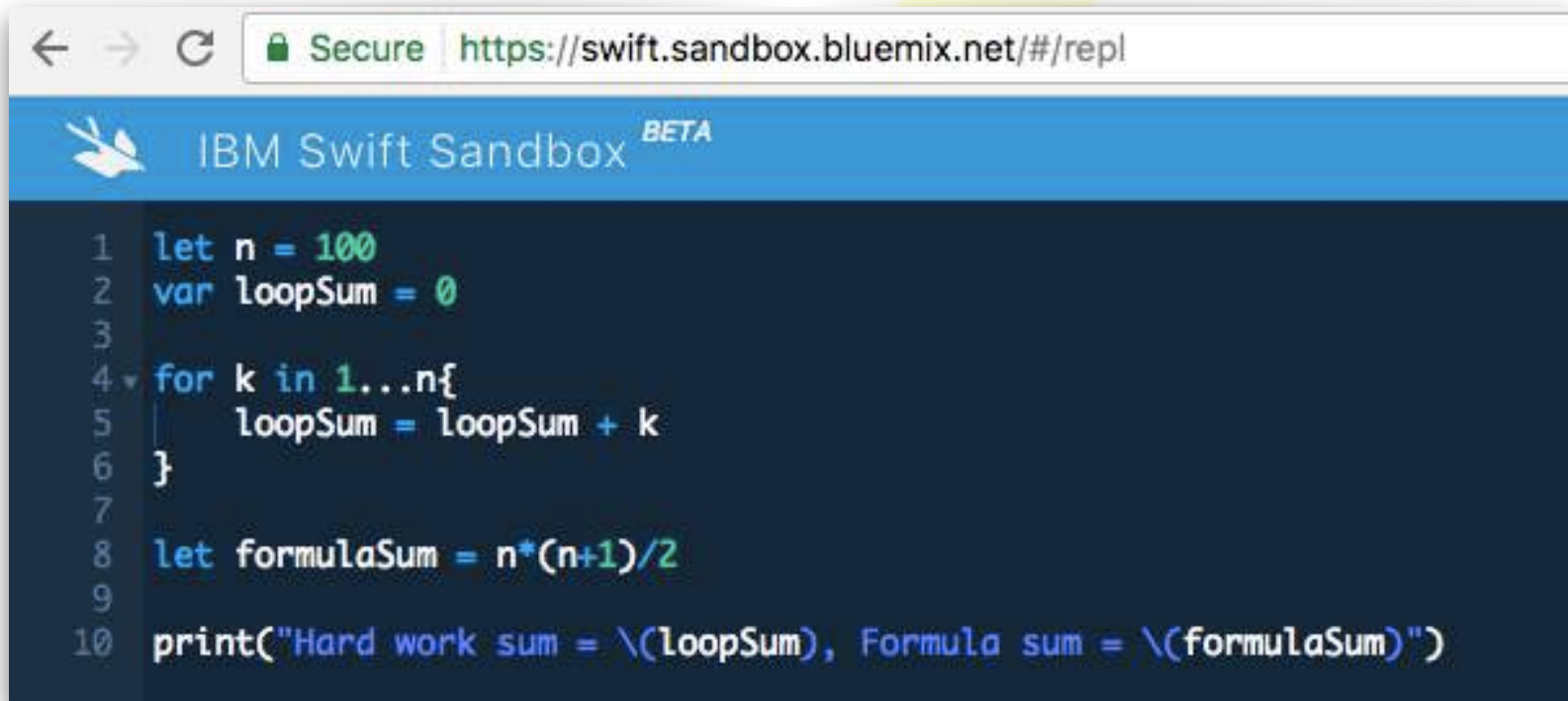
The background features several decorative elements: a large orange 'C' shape at the top, a yellow 'L' shape in the center, and various smaller circles and lines in orange, yellow, and cyan. There are also several geometric diagrams consisting of a central point with lines radiating outwards to other points or shapes.

$$\sum_{k=1}^n k = \frac{n(n+1)}{2}$$

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```
1 let n = 100
2 var loopSum = 0
3
4 for k in 1...n{
5     loopSum = loopSum + k
6 }
7
8 let formulaSum = n*(n+1)/2
9
10 print("Hard work sum = \(loopSum), Formula sum = \(formulaSum)")
```

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# Push Ups, Sit Ups and Adding Numbers

November 17, 2016 Yoni Nazarathy



There are 45 days left until the end of 2016. Do you want to do something meaningful in that time? So many options come to mind. One possibility is to start a simple incremental core strength training program.

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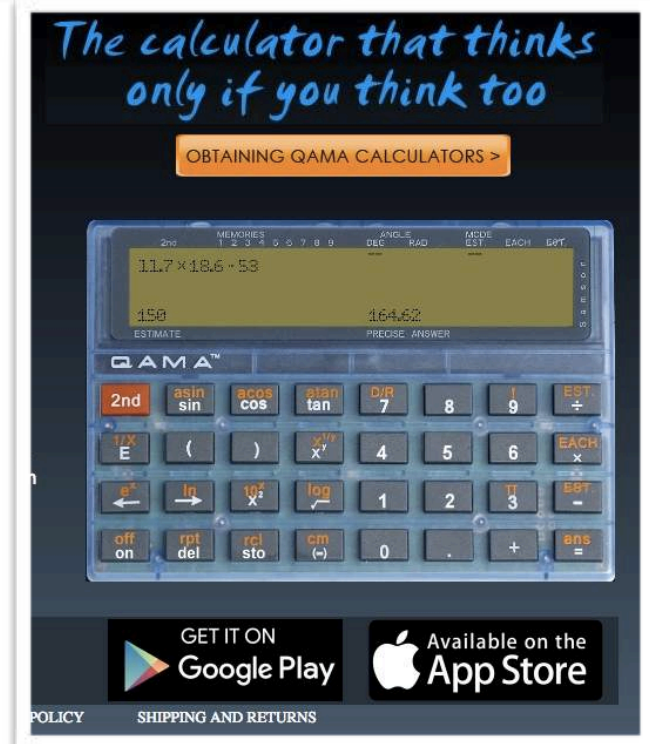
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# Is it true that $19 \times 21 = 20 \times 20$ ?

February 3, 2017 Yoni Nazarathy



I recently came across a neat product called the QAMA Calculator. It is a calculator that encourages thought. Ask it to calculate something and QAMA will ask you back: "First give me an estimate". Once you supply an approximate answer, QAMA calculates the precise answer for you. But only if your approximation was sensible. This calculator forces you to think.



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# Do Some Hailstones Fly Forever?

May 7, 2017 Yoni Nazarathy



How hard is it to grasp open problems in mathematics? Do you need to be an adult, a genius or a research mathematician to enjoy pondering such problems? Or can a curious young person be an investigator as well?

$$a_{n+1} = \begin{cases} a_n/2, & \text{if } a_n \text{ is even,} \\ 3a_n + 1, & \text{if } a_n \text{ is odd.} \end{cases}$$

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← → ↻ Secure <https://play.golang.org>

The Go Playground **Run** **Format** **Imports** **Share**

```
1 package main
2
3 import (
4     "fmt"
5 )
6
7 func main() {
8     a:=27
9     for a != 1{
10         fmt.Println(a)
11         if a % 2 == 0{
12             a = a/2
13         }else{
14             a = 3*a+1
15         }
16     }
17     fmt.Println(a)
18 }
```

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# How old are these lentils?

January 27, 2017 Yoni Nazarathy



Do you keep a jar of lentils? Lentils are those little lens-bean looking things that often mix so well with rice and other ingredients to make tasty and healthy meals. How old are the lentils in your jar?

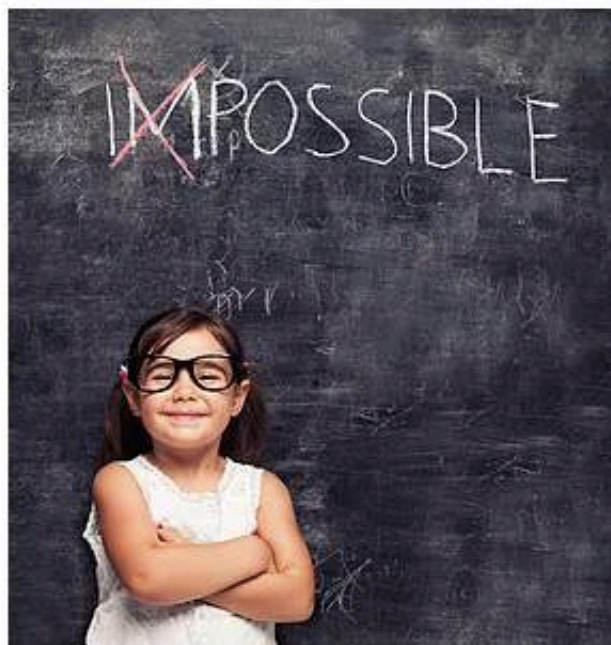
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# All, None and Forever

July 7, 2017 Coco Bu and Yoni Nazarathy




There is something very magical about unsolved mathematical problems, especially those that have been around for hundreds of years. Teachers at school don't have a solution for them and to date, the world's greatest mathematicians don't have solutions either. Some of these problems are quite intricate and require a lot of background to comprehend. But others, are very simple and crisp in their statement, even though solutions are currently not in reach.

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Secure <https://swift.sandbox.bluemix.net/#/repl>

```
1 func isPrime(_ num: Int) -> Bool{
2     var k = 2
3     while k < num{
4         if num % k == 0{
5             return false
6         }
7         k = k + 1
8     }
9     return true
10 }
11
12 let number = 31
13
14 print("Checking \(number) prime: \(isPrime(number))")
15
16 let limit = 100
17
18 var prev = -1
19
20 for n in 2..<limit{
21     if isPrime(n){
22         if n - prev == 2{
23             print("Found twins: \(prev), \(n)")
24         }
25         prev = n
26     }
27 }
28
```

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## The Go Playground

[Run](#)[Format](#)[Imports](#)[Share](#)

```
1 package main
2
3 import (
4     "fmt"
5 )
6
7 func isPrime(num int) bool {
8     for i := 2; i < num; i++ {
9         if num%i == 0 {
10             return false
11         }
12     }
13     return true
14 }
15
16 func main() {
17     limit := 100
18     prev := -1
19     for n := 2; n < limit; n++ {
20         if isPrime(n) {
21             if n-prev == 2 {
22                 fmt.Printf("Found twins:%d, %d\n", prev, n)
23             }
24             prev = n
25         }
26     }
27 }
```

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## Is i More Imaginary than -1?

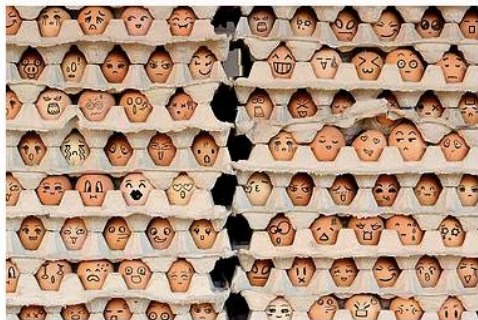
March 18, 2017 Inna Lukyanenko and Yoni Nazarathy



Is the number 5 imaginary? Look at the 5 fingers on your left hand. You

## Are These Digits Random?

April 28, 2017 Yoni Nazarathy



Try chanting a list of random digits. For example, "3", "5", "2", "8" and so

## Do you pay 99 cents or 1 dollar?

June 2, 2017 Coco Bu



It happens so often that we see price tags at shops with prices such as \$1.99 or \$36.99, opposed to \$2.00 or \$37.00. Such prices are designed to make us feel that we are paying a bit less.

## Imagination for Math

June 24, 2017 Yousuf Marvi



I once told my students that simply having an imagination isn't enough to be a good mathematician—foremost, solid skills are needed. I wish I could take my words back. Even Einstein, who had a great mathematical skill, is noted as saying:

## Seeking Patterns with Math

July 15, 2017 Yousuf Marvi and Phillip Isaac



Is math important to you? Is it because you make use of basic math facts in your daily life, such as when you go shopping or walking down the street? Sure, but some people use it for technical work in fields such as finance, engineering, chemistry and architecture, just to name a few. Pretty much every field has some math applications. Math can be an incredibly useful tool. Is it a mistake, however, for us to think of math as only being a tool? We believe it is so much more.

## Neglect and Respect a Quarter of a Percent

June 17, 2017 Coco Bu and Yoni Nazarathy



The other day Coco and Yoni caught up to discuss their journey with One on Epsilon. They started talking about mathematics, curiosity and education. Quite quickly they got onto the subject of children and teenagers. Yoni is the father of three children and Coco interacts with dozens of teenagers as a school teacher.

## Inna and Yoni Choosing Pizza

Inna Lukyanenko and Yoni Nazarathy



## Cut corners and save up to 29%

May 13, 2017 Yoni Nazarathy



"I don't cut corners," he announced proudly. "I do everything by the book!". "Good for you!" I replied with a grin. I then continued, "actually did you know that by cutting

## Choosing a Fair Estimate

May 27, 2017 Yousuf Marvi



## Is Love Squared More Love?

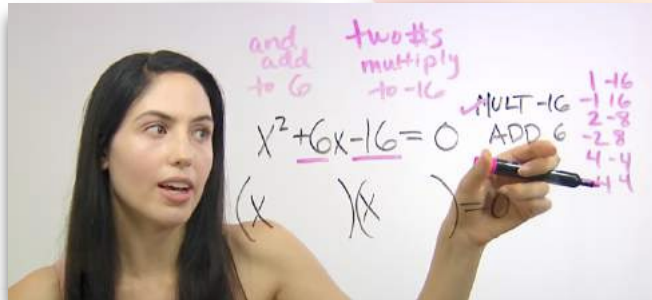
June 30, 2017 Yoni Nazarathy



I sometimes color adjectives, verbs or nouns with the suffix "squared". If something is very tasty, I'll say it is "tasty squared". If something is tough I'll call it "tough squared". Then with love, I do the same. I sometimes say "love squared". But thinking about it more, I ask, what does "love squared" mean?



# COMING SEP 15, 2017: EPSILON STREAM WATCH, PLAY AND EXPLORE MATHEMATICS



Total Drama Number



nine and nine one hundred  
thousands of a millionth

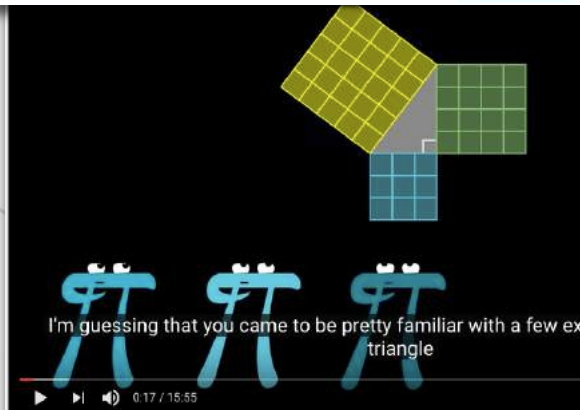
9.00000000009



9.999... really is equal to 10



416,384 views



All possible pythagorean triples, visualized



292K



## $\epsilon$ -stream

### How to Divide a Triangular Cake Between 6 People?

April 16, 2017 Inna Lukyanenko



### DragonBox Algebra 5+

By WeWantToKnow AS

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View in iTunes

#### Description

DragonBox Algebra 5+

DragonBox Algebra 5+

WeWantToKnow AS

#### What's New in

iOS 5.1.1 compatibility

### Square Root Marbles

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How about you?

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on the Apple App Store. Your child will love



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and take part in a **global conversation**.

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October 10 - 17, 2017

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