BLUEBIRD MATH CIRCLE
Alliance of Indigenous Math Circles

Issue 30: I Spy

Share your problems, solutions, models, stories, and art:
https://aimathcircles.org/Bluebird

NEWSFLASH

Join LIVE Bluebird Math Circle to work on these activities together with friends and family.

Monday June 27, 5-6 PM MDT online.

Sign up at **https://aimathcircles.org/Bluebird**

MATH JOKE

What is NEVER ODD OR EVEN?

(The answer is at the bottom of page 2.)

Inspiration: Native American and Old European Art

What do we see looking at a piece of art? Beauty, harmony, pleasing balance of colors and shapes? Traditional art represents beliefs and is culturally significant. Can we discern beliefs or ideas in each of the three pictures below? What do *you* see? Answer before reading the next paragraph.
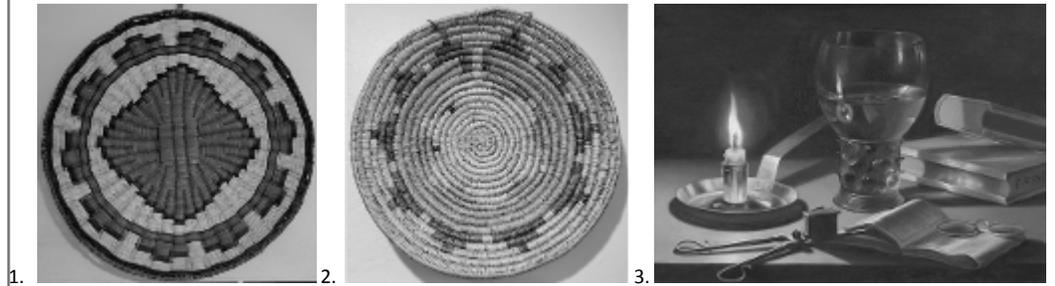
1. *Hopi plaque, artist unknown.* Baskets are made from plants establishing a connection to the land. "Plaques play an intricate role in Hopi society and are given by women as thank you gifts, as well as by Katsinam. These baskets are also used during ceremonies and play an especially important role in the initiation ceremonies of Hopi girls."
https://blog.kachinahouse.com/a-history-of-hopi-basketry/

2. *Navajo Wedding Basket, artist unknown.* All elements of the design have important meaning. For example, the outer band signifies People, Animals and Plants; next bands going in symbolize the Path of the Sun, then Path of the Moon, and Path of the Constellations. Other elements include Earth, Different Types of Mountains, Sunray and Rainbow, Clouds and Different Types of Rain, Place of Emergence, Holy People, East and Dawn. Detailed explanation: @nizhinibahnavajo on Instagram
https://www.instagram.com/p/7yhPV7O99o/

3. *Pieter Claesz, Still Life with Lighted Candle, 1627, Mauritshuis, The Hague, Netherlands.* One of the possible messages sent to us by the artist: *The time of life is flitting, hurry up to acquire knowledge.* Traditionally, a *candle* had lots of meanings. One meaning was the passing of time. *Books* are easy: they meant learning or transmitting knowledge.

Can you see other messages in the three art pieces? Share your ideas with Bluebird at https://aimathcircles.org/bluebird/ or come to the June 27 meeting and tell us!

## Warm-Up: Seeing in both senses (What Do I Spy?)
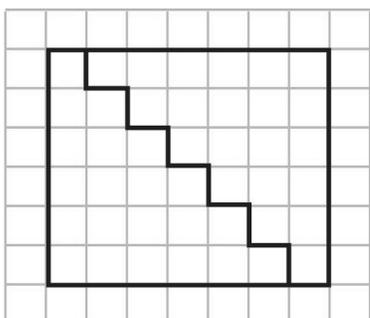
1. What do we see?
2. Can we count the little (grid) squares inside the rectangular grid? What is the easiest way to calculate it?
3. What is the number of grid squares under the 'staircase'? *Hint*: write an expression but don't evaluate it. Examples of mathematical expression (not related to the picture) are:
(a) $3 + 18 - 26$; (b) 17×19; (c) $2 \times (4 + 6 + 12)$; (d) $x^2 + y^2$
4. What is the number of grid squares above the staircase? (*Hint*: write an expression but don't evaluate it.)
5. What do we see?
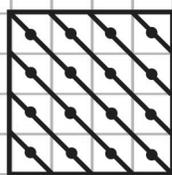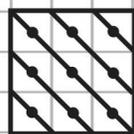
What Do I Spy?

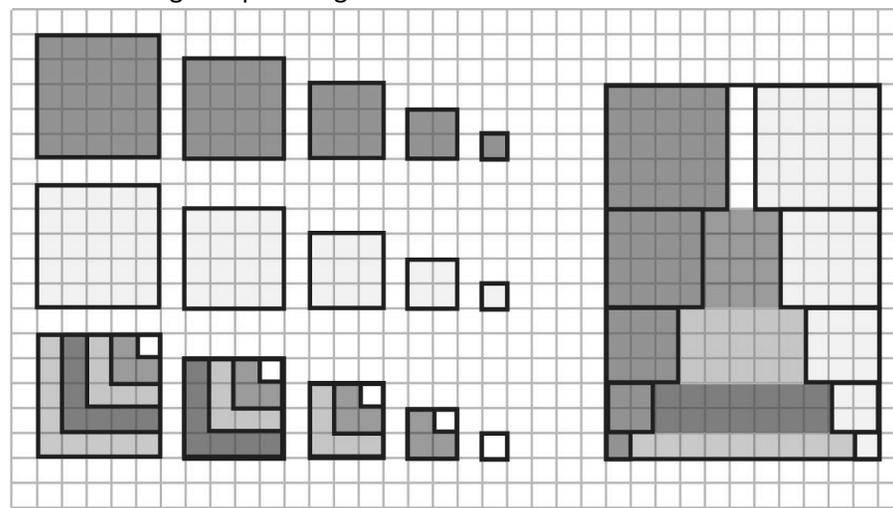**1. Let's count the grid squares:**
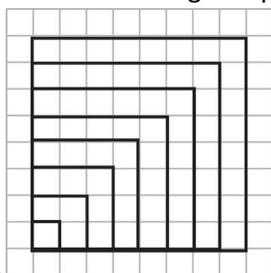
A.
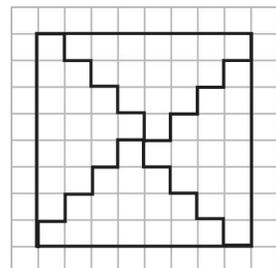
B.

2. Let's count the dots:

3. Let's count grid squares again:

Hint: What is the relationship between the left side and the right side of the picture?

Ask Bluebird

QUESTION—*Why does math have to be so annoying?* From Brian Z.

BLUEBIRD SAYS—It's a great question since many people feel this way but don't dare to ask. And yet we mathematicians know that asking anything and everything is good. Let's start with spying (ha ha!) out the meaning of the word 'annoying': *"Things that are annoying are often those that distract, interrupt, or intrude on what you're trying to do, like a noise that keeps waking you up when you're trying to fall asleep or a pop-up ad."* (From https://www.dictionary.com/browse/annoying.)

That's it! What is central in mathematics is **solving problems**. Once you start, the problem keeps bugging you until you've solved it. You might wrestle with it for a minute, an hour, or a day. Or your whole life – if the problem is interesting and you're determined to 'defeat' it. But there is a reward: the moment you suddenly find a solution fills you with incredible joy. The longer you've struggled, the bigger the joy. Doing mathematics is like being on a treasure hunt where the treasures are created by the hunter and because of this are even more precious.

FUN FACT OF THE FORTNIGHT On May 11, 1997, chess grandmaster and the world champion Garry Kasparov resigned after 19 moves in a game against Deep Blue, a chess-playing computer developed by scientists at IBM.

At the time, artificial intelligence researchers thought that a computer would never defeat a human expert at another board game, Go. Invented in China in the 6th century BCE, Go is much harder for a computer to play than chess is. The players use black and white stones on a square 19-by-19 grid of points, and the rules seem to be very simple.

However, the number of different possible arrangements of stones stretches beyond 10^{100}, rendering it impossible for a computer to play by brute force. Nevertheless, eighteen years later a machine finally defeated a professional Go player. What's more, the machine won not by virtue of overwhelming computational power, but by employing "machine learning" tools that enable it to teach itself and to think more like humans do. To achieve this, computer scientists developed a program which relies on "deep neural networks"–computer programs that mimic the connections of neurons in the brain and have the capacity to learn. Nowadays, deep neural networks are used in fields such as pattern recognition, automated translation, medical diagnostics, and smartphone assistance. Learn how to play Go online at https://online-go.com/learn-to-play-go. (Photo: Wikimedia Commons.)

Joke answer: NEVER ODD OR EVEN is a palindrome, that is, a phrase that reads the same back to front.