A little bit of Aggression

Lego photo by brickset

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A little bit of Aggression

"A little bit of aggression" is a two player game. It's a great way to give your students practice with subtraction. Students who have already mastered subtraction will be engaged in rich problem solving so it is well spent time for them too.

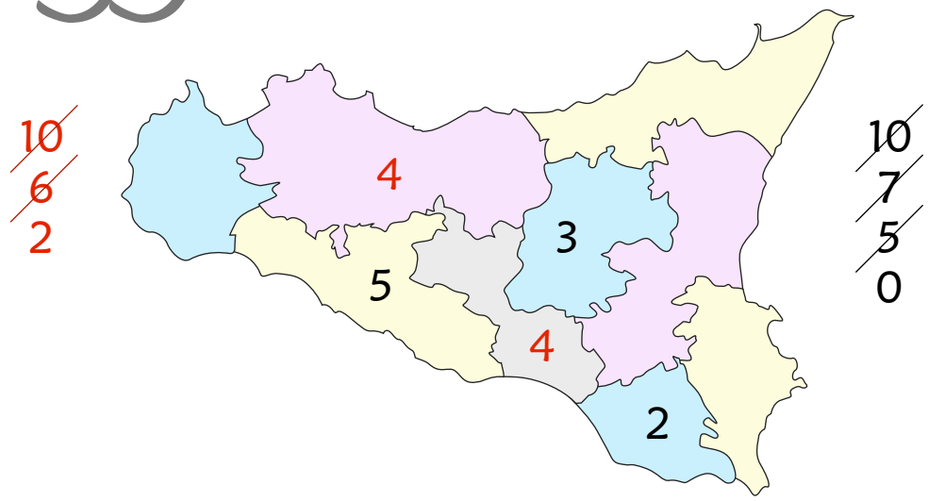
Set-up:
Players choose a map or draw their own. On the right is a map of Sicily which is played between Rome and Carthage. Each has 10 armies.

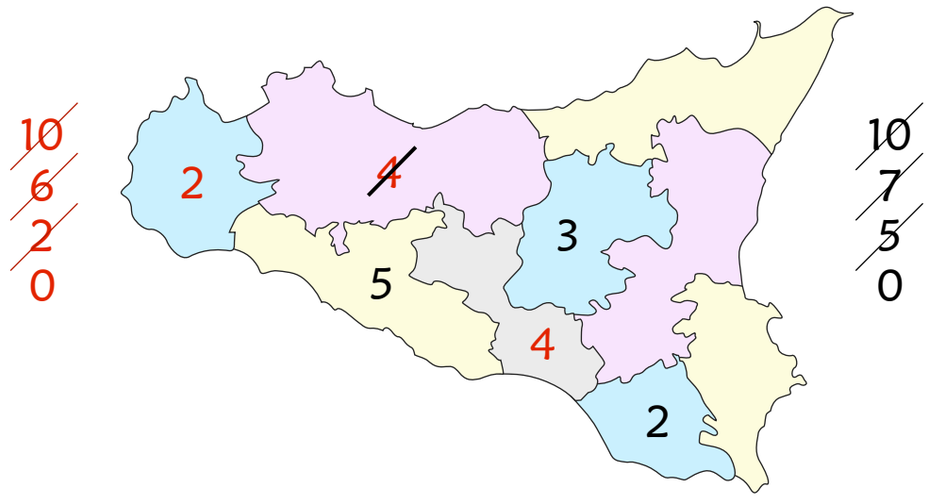
Placement Phase:
Players take turns choosing an empty region and placing any number of their armies into that region. Armies do not move once assigned to a region. If a player has no armies left or if there are no empty regions on the board - they pass. Placement Phase continues until both players pass. Top right example: Black has finished placing all his armies and will pass on her next turn. Red has two armies left to place.

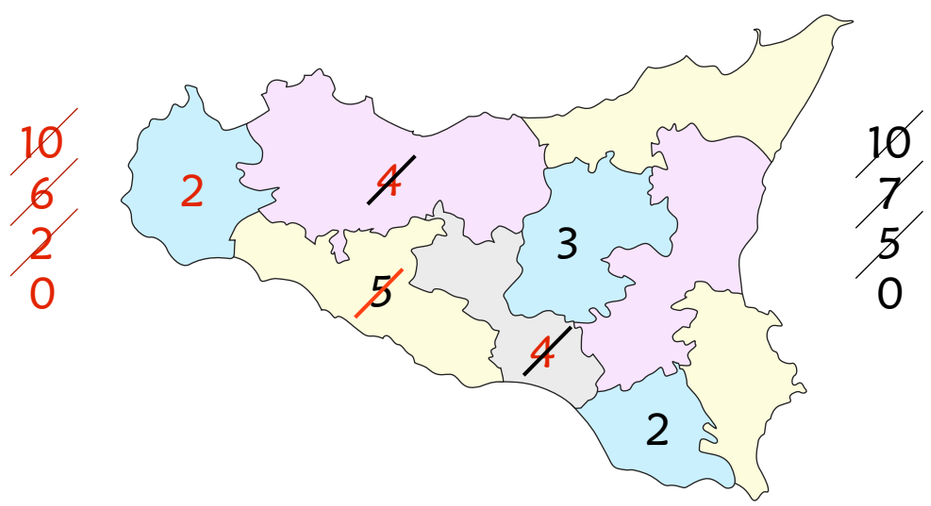
Attacking Phase:
The player who passed first in the Placement Phase begins. Players alternate selecting an enemy region and counting all of their neighbouring armies. If their combined strength is greater than the number of armies in the enemy region, the enemy armies are all destroyed. Friendly armies lose nothing. Continue until no more fighting is possible. Middle right example: Black destroys one of the red armies of strength 4 because 3 + 5 > 4. Red will next destroy the black army of strength 5 because 2 + 4 > 5.

Scoring:
The player who controls the most territories wins.
In the case of a tie, count the armies - the most wins.
Lower right example: Black controls two regions - Red controls one. Black wins.

The rules are adapted to the math classroom from Eric Solomon's original game of Aggression from 1973.







Standards for Mathematical Practice

All MathPickle recommendations, including *A little bit of aggression*, are guaranteed to engage a wide spectrum of student abilities while targeting the following Standards for Mathematical Practice:

MP1 Toughen up!
This is problem solving where our students develop grit and resiliency in the face of nasty, thorny problems. It is the most sought after skill for our students.

MP3 Work together!
This is collaborative problem solving in which students discuss their strategies to solve a problem and identify missteps in a failed solution. MathPickle recommends pairing up students for all its puzzles.

MP6 Be precise!
This is where our students learn to communicate using precise terminology. MathPickle encourages students not only to use the precise terms of others, but to invent and rigorously define their own terms.

MP7 Be observant!
One of the things that the human brain does very well is identify pattern. We sometimes do this too well and identify patterns that don't really exist.

Common Core State Standards

A little bit of aggression targets Common Core State Standards for students learning subtraction. It is essential in every curriculum world wide.

Grades 1-3

CCSS.MATH.CONTENT.1.OA.C.6
Add and subtract within 20, demonstrating fluency for addition and subtraction within 10.

CCSS.MATH.CONTENT.2.OA.B.2
Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.

CCSS.MATH.CONTENT.3.NBT.A.2
Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

CCSS.MATH.CONTENT.1.OA.C.5
Relate counting to addition and subtraction.

http://www.corestandards.org/Math/Practice/

For the Teacher...

"A little bit of aggression" is a great game to give your students practice with addition, subtraction and problem solving. It could be the only thing they do in math class for grade 2 or 3, and I guarantee they will do better than most carefully designed curricula.

Some students get enamoured with using huge numbers of armies. Hold them back. There is much rich strategy to be understood from spending the first week using 10 armies or less. To emphasize this, the second map that students see (the gaza strip) is actually much simpler than the first map. Much thanks to Jo Elsner of Nueva school near San Francisco who was emphatic and correct on this point.

Your class could play with simple maps like the gaza strip until they find a way to win every time with one side or the other. I have not done this myself so I do not know if the Palestinians or Israelis are going to win this game.

Students who struggle with numbers can put cubes or some other objects in each territory rather than numbers.

"A little bit of aggression" is one of the greatest educational games that I have encountered... it is strategically deep, cheap, connects to geography and history, and can provide the backdrop for students to learn subtraction.

Be Miserly:

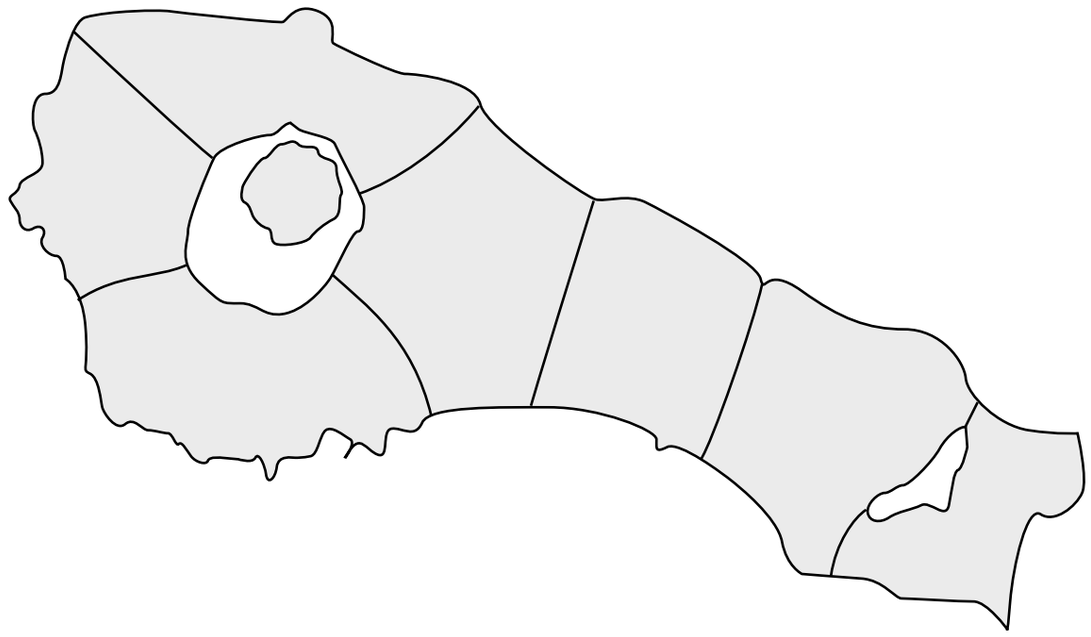
The maps for "A little bit of aggression" are really cool for a subset of students. Do not let students see them. Keep the mystery alive. Give one or two maps each day - probably in the order that they are arranged here.

How to introduce a new game like "A little bit of aggression":

Instead of introducing a new puzzle by explaining rules to the class, just jump in and ask students to contribute numbers WITHOUT KNOWING THE RULES. Get all students to contribute - systematically going back and forth between the left side of the class and the right side. Students do not raise their hands... We want all students to contribute.

After the first game students will understand how to play.

This strategy efficiently engages more students than going through the rules at the start. Students get engaged when they contribute.



$500 challenge

Perhaps your students have created a beautiful fantasy world map or a student who is not usually excited about math has become engaged. Perhaps a pair of students discovered that the first or second player always wins on a certain map. Whatever your inspirational experience with this gem of a game, I'd like to know.

I'll offer $500 for a photograph and/or story highlighting "A little bit of aggression" in the classroom.

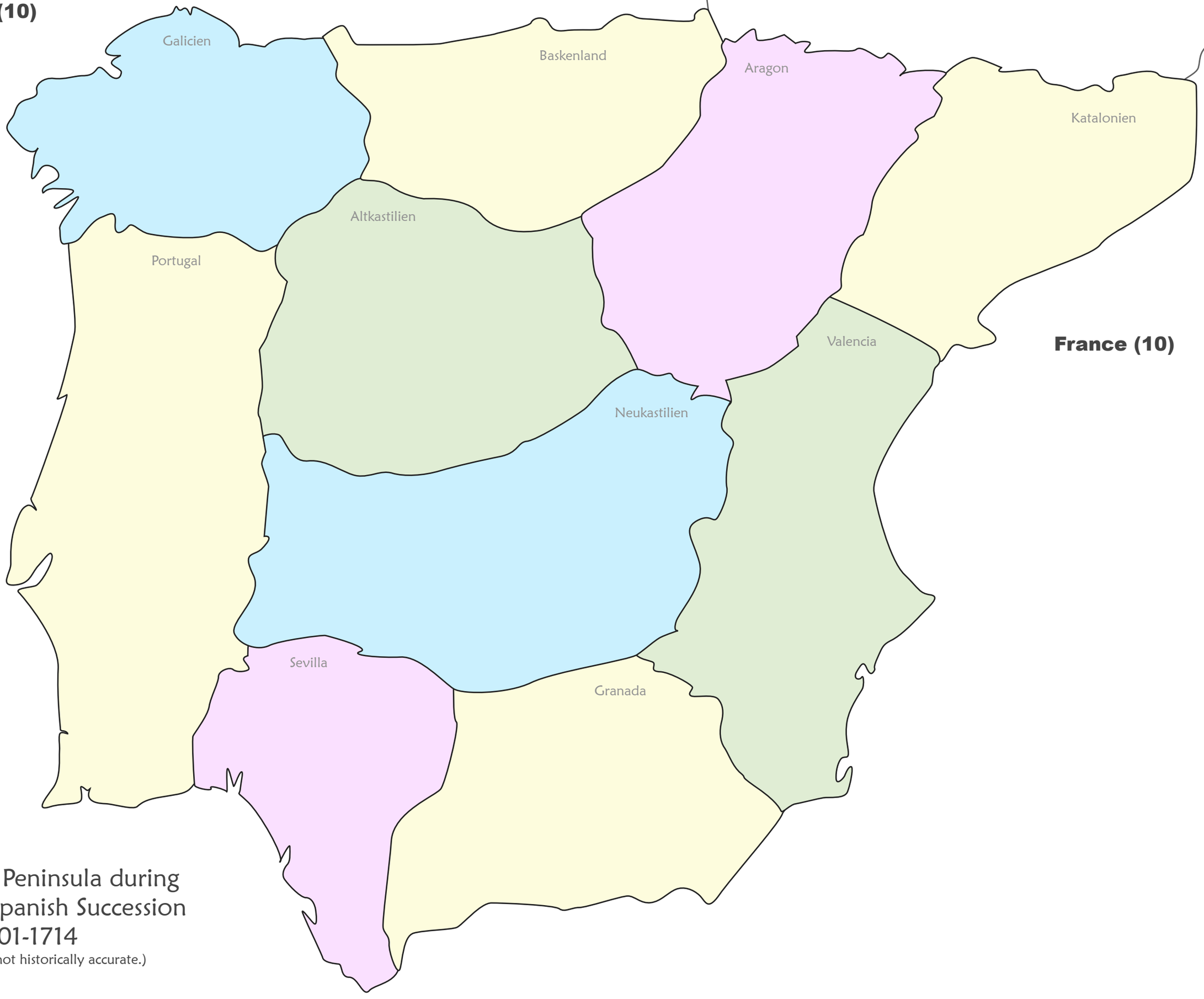
All students featured must have appropriate consent. All photographs and stories submitted may be used in an updated version of this pdf file and to promote this puzzle elsewhere.

Send submissions to gord@mathpickle.com. Use "$500 A little bit of aggression challenge" as the subject of the email. The winning classroom will be announced the first March 14th that I have at least 10 submissions from different schools. I hope this will be March 14th, 2016.

$100 challenge for older students...

I'll offer $100 for a general solution to an atoll with n territories and each player starting with n armies. For all n I want to know if the first or the second player wins or if the game is a tie. Do not contact me with your solution. Get it published in a reputable journal. I have not solved it. I have no idea if this is extremely hard or extremely extremely hard ;-)

Great Britain (10)
- place 1st

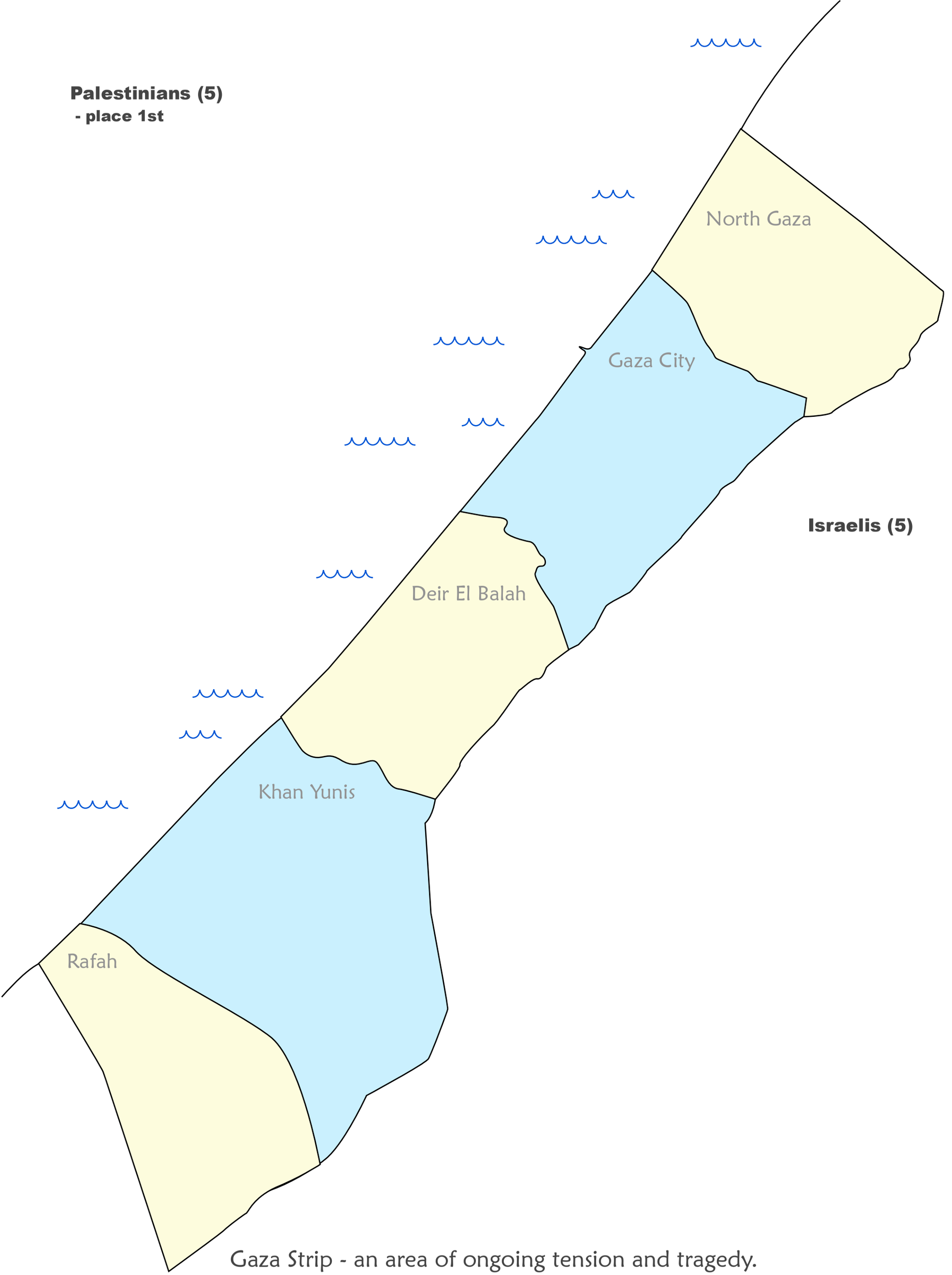


France (10)

The Iberian Peninsula during
the War of Spanish Succession
1701-1714

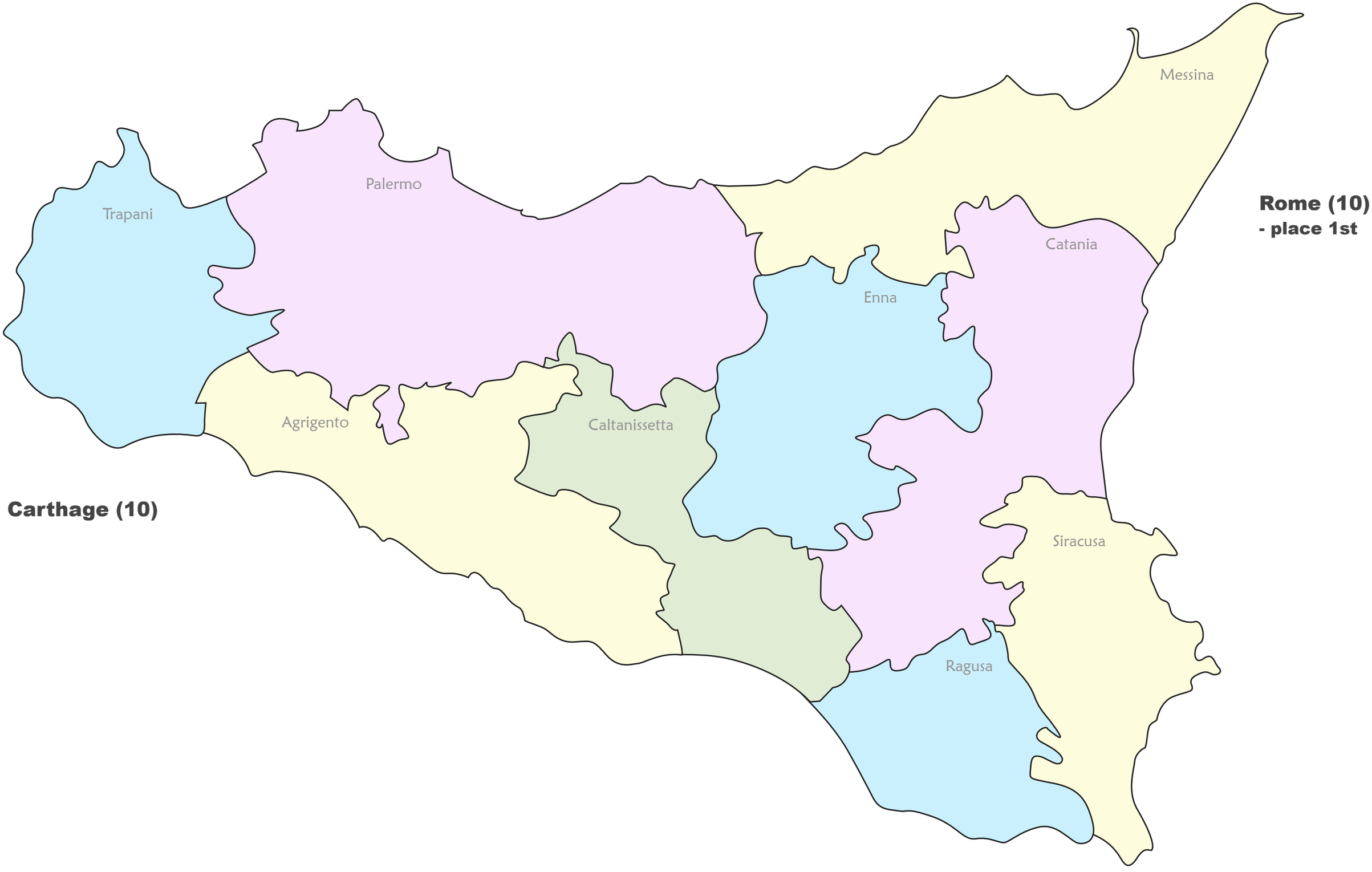
(Territories are not historically accurate.)

Palestinians (5)
- place 1st



Israelis (5)

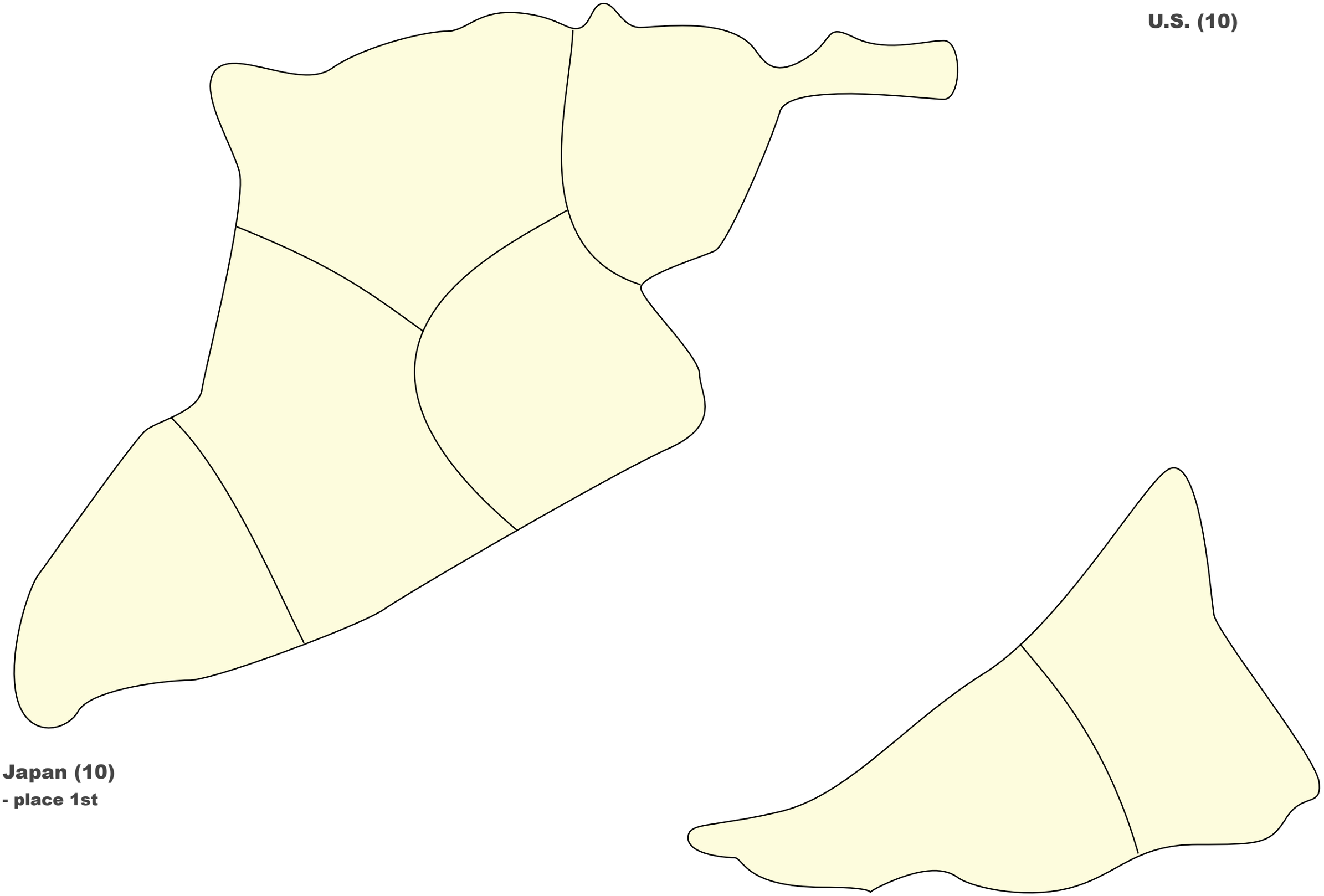
Gaza Strip - an area of ongoing tension and tragedy.



Sicily during the Punic Wars 264 BC to 146 BC

(Territories are not historically accurate.)

U.S. (10)



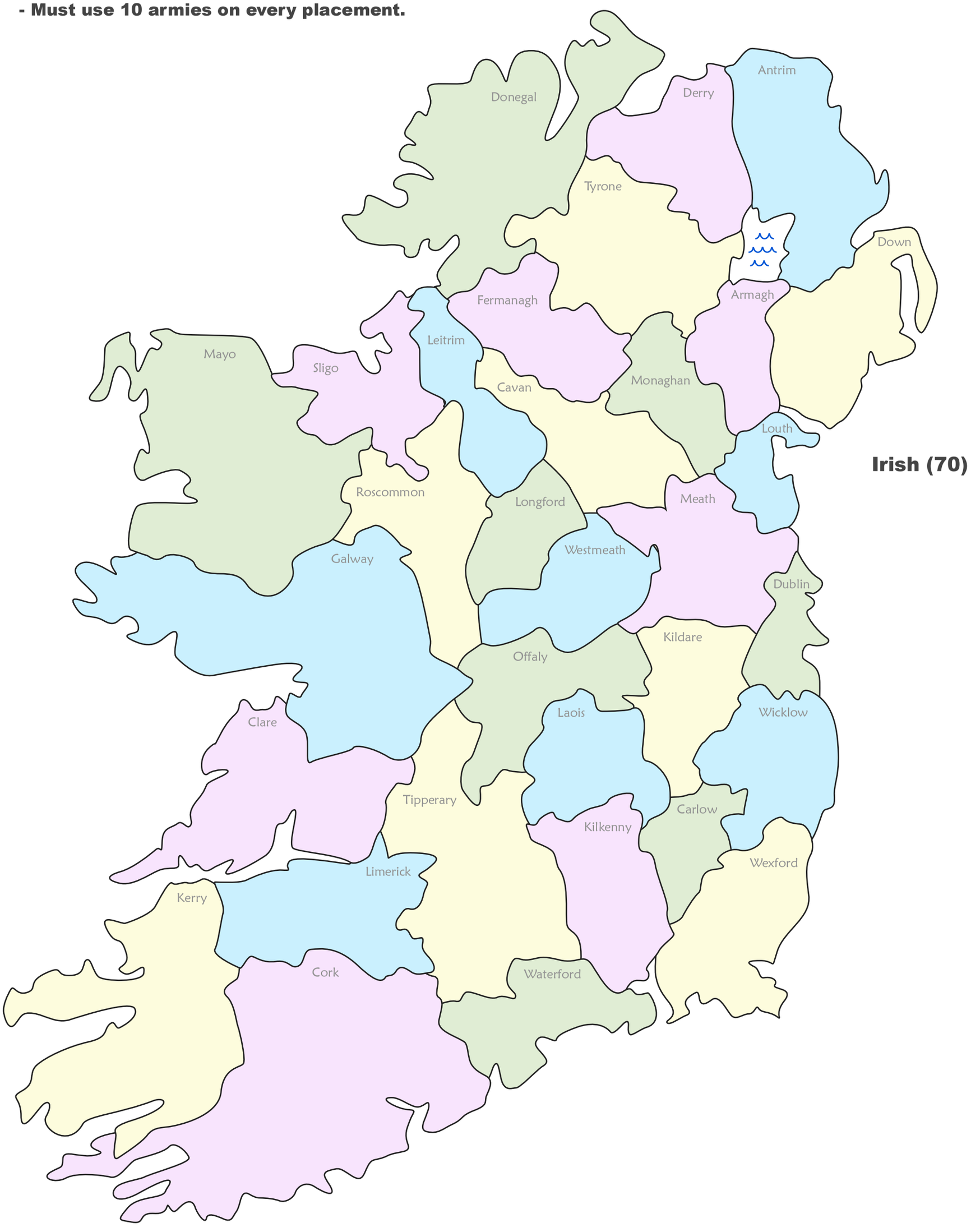
Japan (10)
- place 1st

The Battle of Midway - June 4-7 1942

(Territories within the Islands are not historical. The islands have been moved closer to one another.)

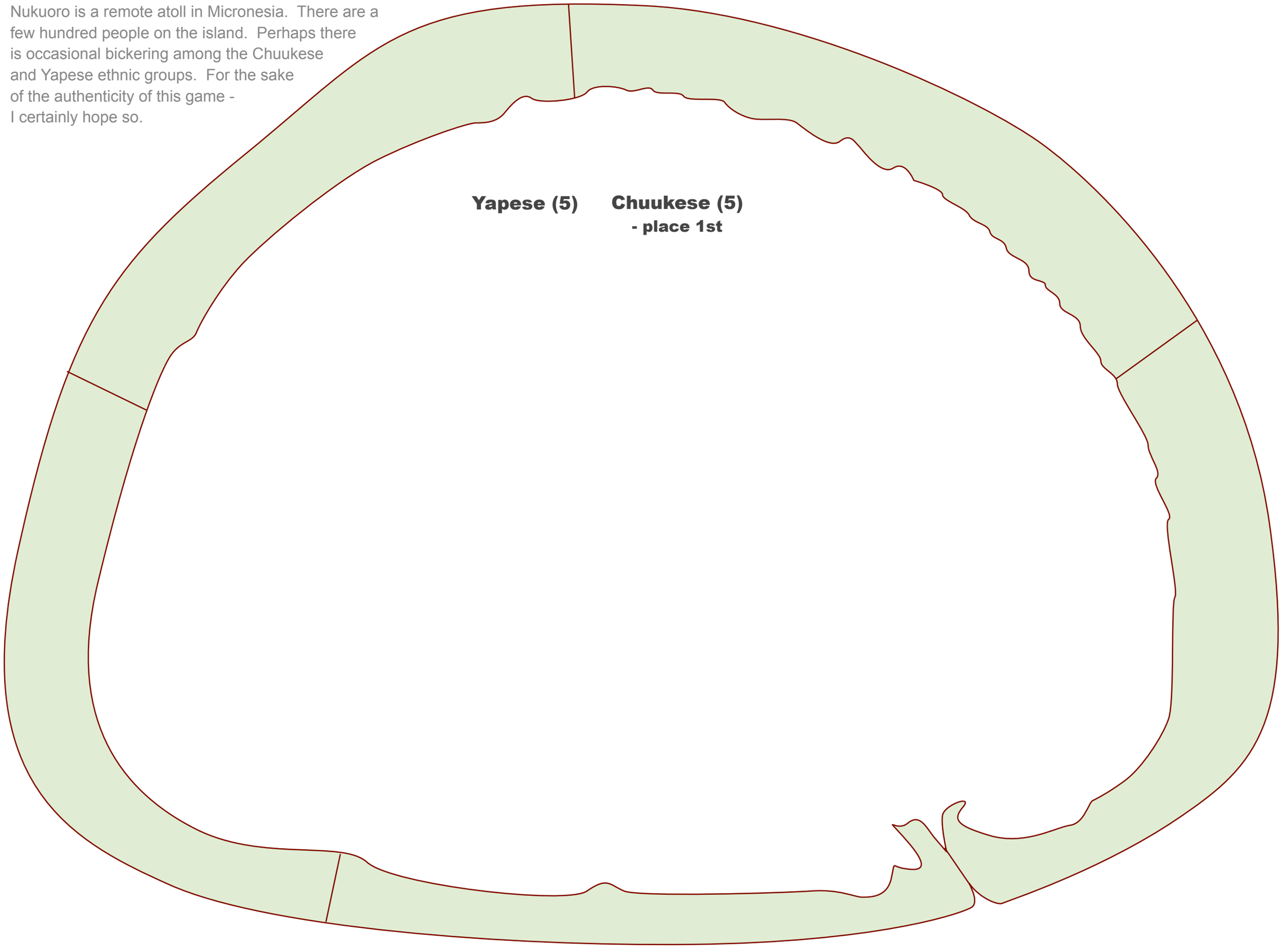
English (100)

- **place 1st**
- **Must use 10 armies on every placement.**



Irish (70)

Nukuoro is a remote atoll in Micronesia. There are a few hundred people on the island. Perhaps there is occasional bickering among the Chuukese and Yapese ethnic groups. For the sake of the authenticity of this game - I certainly hope so.



Russia (25)
- place 1st
- 1st placement is doubled for free.

Volynsika
Rivnensika
Zhytomyrsika
Kyyivsika
Chernihivsika
Sumsika
Livivsika
Khmelinytsika
Ternopilsika
Vinnytsika
Cherkasika
Poltavsika
Kharkivsika
Luhansika
Ivanofrankivsika
Kirovohradsika
Dnipropetrovsika
Donetsika
Zakarpatsika
Chernivetsika
Odesika
Mykolayiv
Zaporizika
Khersonsika
Crimea

NATO (20)
- last placement is doubled for free

The Ukraine War - 2014

Russia (10)
- place 1st

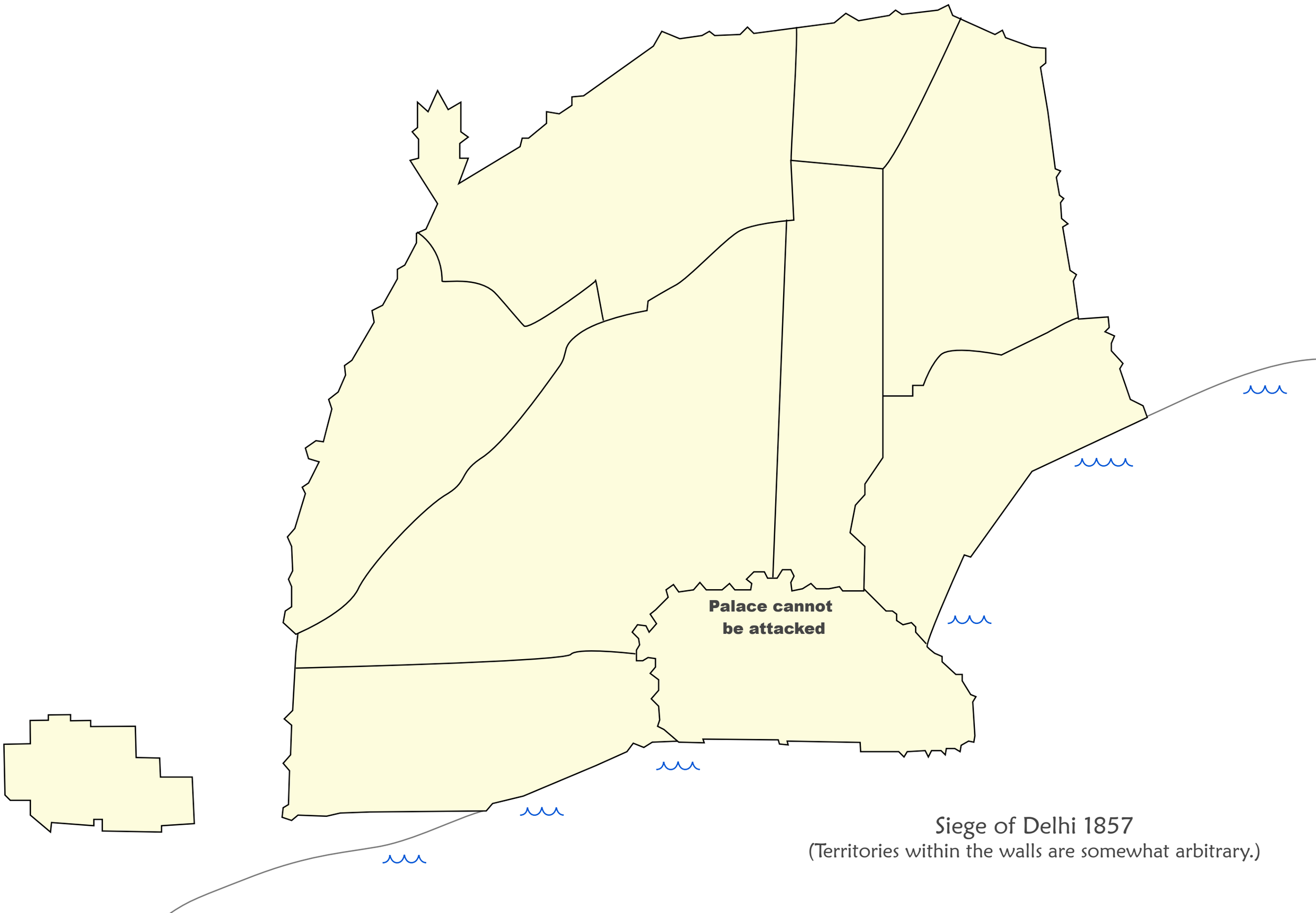
requires
2 armies

Japan (10)

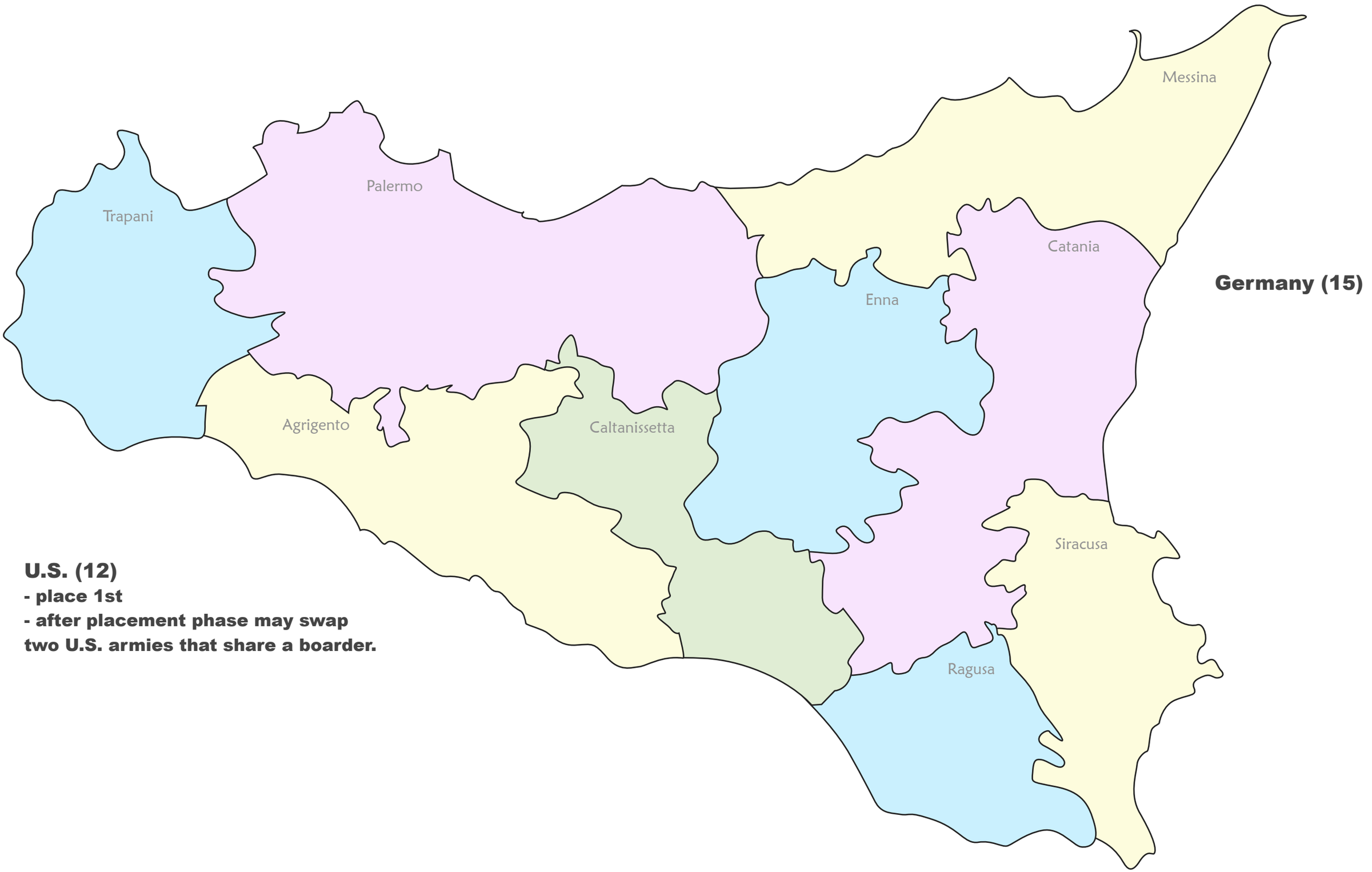
To capture the volcano requires 2 armies.
Onekotan Volcanic Island is in the middle of a dispute between Russia and Japan.
(Territories within the Islands are arbitrary.)

Mughal Empire (10)
- place 1st

East India Company (13)



Siege of Delhi 1857
(Territories within the walls are somewhat arbitrary.)



Germany (15)

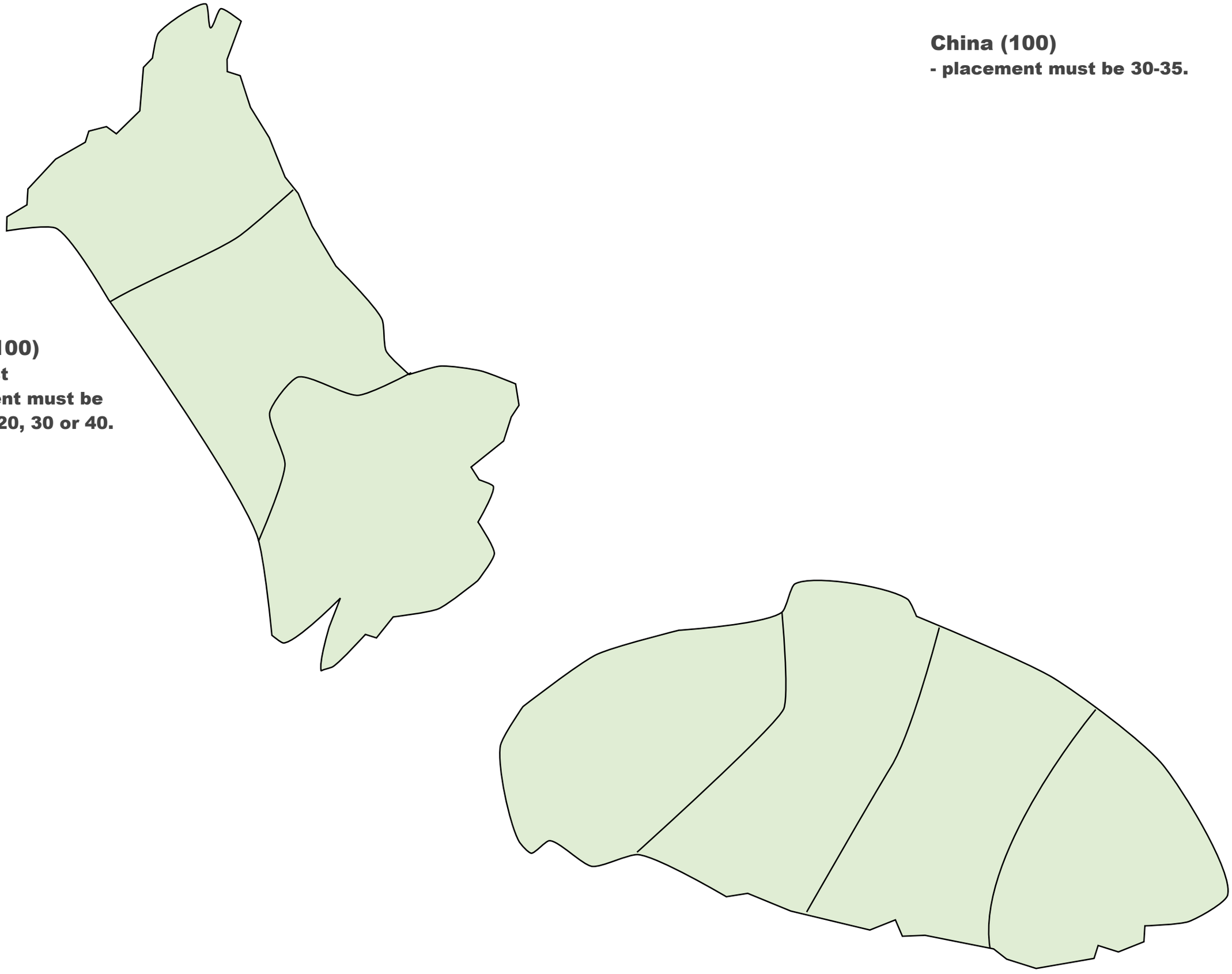
U.S. (12)
- place 1st
- after placement phase may swap two U.S. armies that share a boarder.

Sicily attacked by U.S. in World War II

(Territories were chosen for their nice shapes - not for historical accuracy)

Japan (100)
- place 1st
- placement must be
  10, 20, 30 or 40.

China (100)
- placement must be 30-35.



Two of the Senkaku Islands (尖閣諸島) Kita-Kojima (left) and Minami-Kojima (right) that may spark World War III

(Territories within the Islands are arbitrary.)

Galicien

Baskenland

Aragon

Katalonien

Altkastilien

Valencia

Neukastilien

Sevilla

Granada

Fascists (32)
- place 1st
- during your attack phase, make as many attacks as you wish.

Communists (40)

Spain

Russia (25)

- Place 1st
- On its turn, Russia must place in one of the six underlined territories if possible.

Volynsika
Rivnensika
Zhytomyrsika
Kyyivsika
Chernihivsika
Sumsika
Livivsika
Khmelinytsika
Poltavsika
Kharkivsika
Luhansika
Ternopilsika
Vinnytsika
Cherkasika
Ivanofrankivsika
Kirovohradsika
Dnipropetrovsika
Donetsika
Zakarpatsika
Chernivetsika
Odesika
Mykolayiv
Zaporizika
Khersonsika
Crimea

NATO (24)

Ukraine

Put Your Students in a Pickle!

I'm a father of two elementary school children, a mathematician, and designer of puzzles and board games. Students call me Dr. Pickle. There is nothing I enjoy more than stumping students and having them stump me.

I founded MathPickle.com in 2010 to inject new ideas into the classroom. MathPickle's primary objective is to get thirteen curricular unsolved problems into classrooms worldwide - one for each grade K-12. A conference in November 2013 established the thirteen unsolved problems. To aid with the dissemination of these awesome problems, MathPickle is looking at setting up a $1,000,000 reward for each - the prize money to be split between the person who solves the problem and their most inspirational K-12 educator.

MathPickle is also developing a range of curricular puzzles like the ones you'll find at TpT. These help teachers them with their number one challenge:

"How to engage the spectrum of student ability?"

Whenever an elementary school teacher wants to teach addition, she will invariably face 20% of students who already know how to add and another 20% who are struggling with last year's curriculum. How can she engage the top students without losing the bottom students? How can she engage the bottom students without boring the top students?

One solution: Parents of top students often ask that their child be allowed to accelerate through the curriculum. This exacerbates the problem for future teachers, and sets up a failure-impoverished education experience for the bright student.

A wiser approach is to use curricular puzzles, games and mini-competitions to simultaneously teach curriculum to the students who need it, and to deflect top students into tough problem solving activities. This is never time wasted, because problem solving is the primary reason we teach mathematics.

The experience of mathematics should be profound and beautiful. Too much of the regular K-12 mathematics experience is trite and true. Children deserve tough, beautiful puzzles.

Gordon Hamilton
MMath, PhD