

Around the World with Math Fair!

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Math across the curriculum

- Easy: incorporating literacy into any subject.
- Hard: incorporating math into any subject.

My perspective on math fair:

- there's not just elementary students in attendance!
- Math fair is also for future, and practicing teachers.
- It's a golden opportunity to expand our perspectives on math.





















Math Fair Themes

I'm (relatively) new to math fair... having a theme is important!

A "theme" unites all the projects.

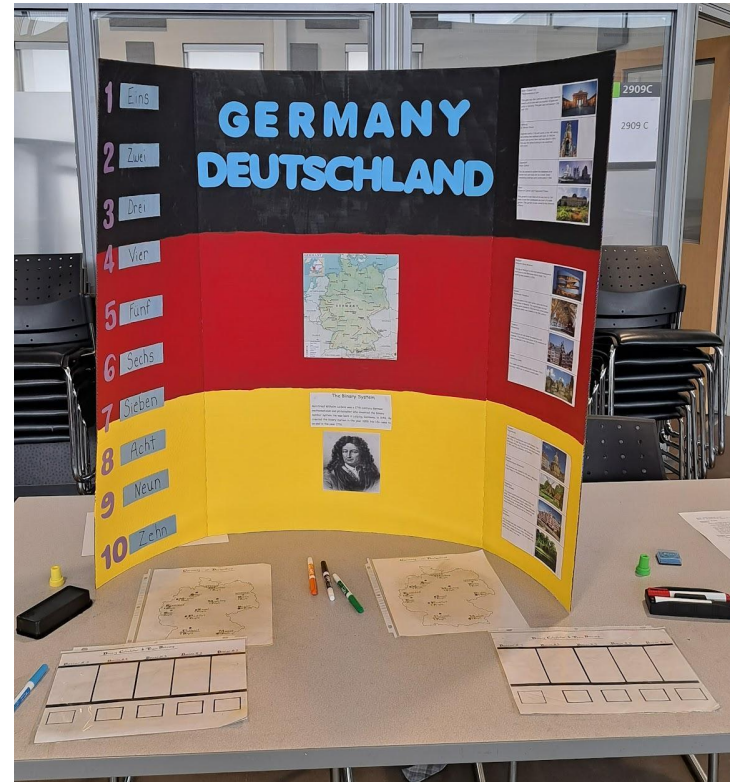
There are many possibilities!

- ~~Disney~~ (please no)
- Space
- Under the Sea
- Nature
- Around the world

Math Passport			
 Netherlands	 Greece	 Ireland	 Ukraine
 Canada	 Italy	 Egypt	 Brazil
 St. Lucia	 Thailand	 China	 Australia
 France	 Africa	 Ancient Rome	 Japan
 Spain	 Mexico	 England	 PASSPORT

Possibilities for each presentation

- Language: how do people count in your country?
- Culture: is there a practice in your country that can be viewed through a mathematical lens?
- Art: how do people in your country express themselves through art?
- History: what mathematics developed in your country?
- What else?



Aside: why might we want to do this?

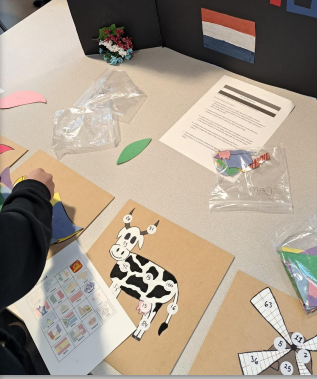
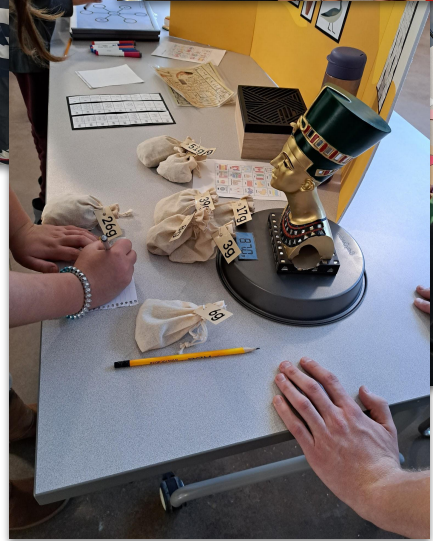
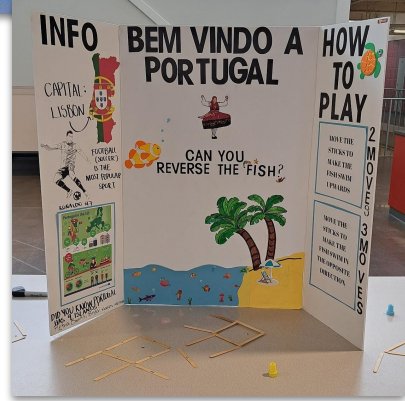
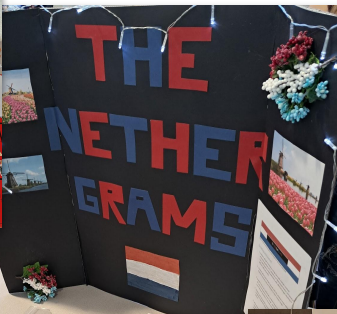
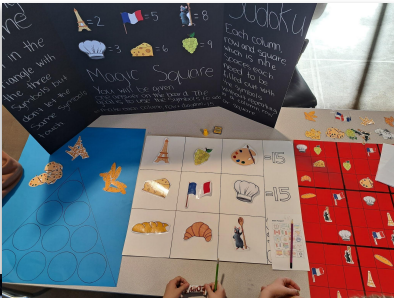
We want students to engage with games and problems so that they think differently.

We can also do this by encountering other cultures.

Why not both?

Quantity	English	French	German	Cree
1	One	Un	Eins	Pēyak
8	Eight	Huit	Acht	Ēyinānew
10	Ten	Dix	Zehn	Mitātāt
11	Eleven	Onze	Elf	Mitātāt Pēyakosāp
12	Twelve	Douze	Zwölf	Mitātāt Nīsosāp
13	Thirteen	Treize	Dreizehn	Mitātāt Nistosāp
20	Twenty	Vingt	Zwanzig	Nīstanaw
21	Twenty one	Vingt-et-un	Einundzwanzig	Nīstanaw Pēyakosāp
80	Eighty	Quatre-vingt	Achtzig	Ēyinānēwmitanaw

Red Deer Polytechnic* examples

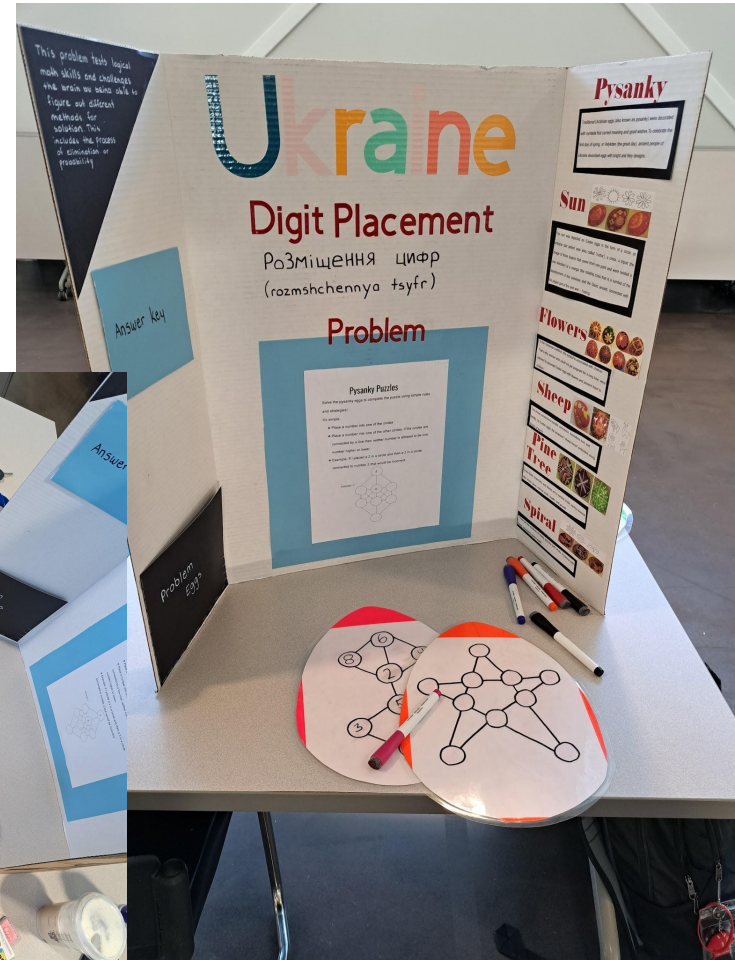


*yes, we offer legit education degrees!

Ukraine: Colouring Pysanka

How many colours are needed to colour the eggs so that no two neighbouring regions are coloured the same?

This presents an entry point to contemporary mathematics: this is the [four colour theorem](#) in action!



Japan: Kenken

Kenken is sudoku with arithmetic.

(Aside: I have a strict rule that math fair games can't only be about arithmetic! Kenken is arithmetic with strategy.)

(Another interesting aside: Sudoku is a graph-colouring problem!)



New Zealand: Grandmother's House

Students are welcomed with a Pōwhiri - they walk through the rooms of the house; can you walk through all rooms, visiting each exactly once?

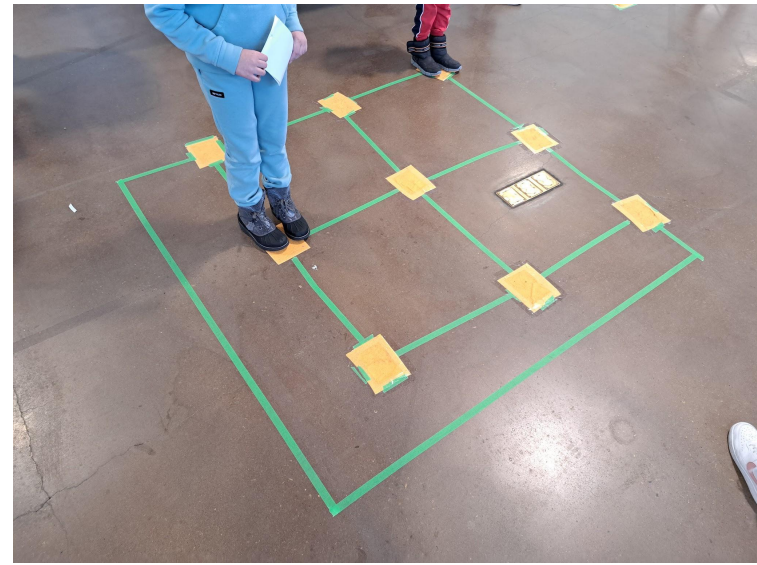
(Students consulted Dr. Greg Oates, a New Zealand mathematics education researcher on Maori language and culture!)



Ireland: Hamiltonian Paths

Can you walk along the edges and visit each vertex exactly once?

[William Rowan Hamilton](#) (1805-1865) was a *major* influence in mathematics, and Irish. Finding Hamiltonian paths on graphs is an extremely difficult problem in mathematics! They're used in route planning, computer networks, and on and on...



Philippines: Tapatan

Let's play!

(Disclaimer: I don't know a good strategy.)



But...where's the math?

“Math” is often viewed as being about manipulating numbers and getting correct answers. We need to actively fight against this view of mathematics.

Arithmetic is to math as spelling is to literature.

Math is strategy! Analysis! Logic! Persistence! And so much more.

So, a math fair isn't enrichment, it's not outside the curriculum; it *is* math. Let it be the curriculum!