

# Mathfinder

Teachers, please copy both sides of this page for your students to take home.

## Dear Students and Parents,

We hope you enjoyed your recent day of mathematics exploration and investigation with Pacific Science Center's *Mathfinder* van. The Science On Wheels program, which began operating in 1974, is an interactive outreach program that travels to schools across the state of Washington.

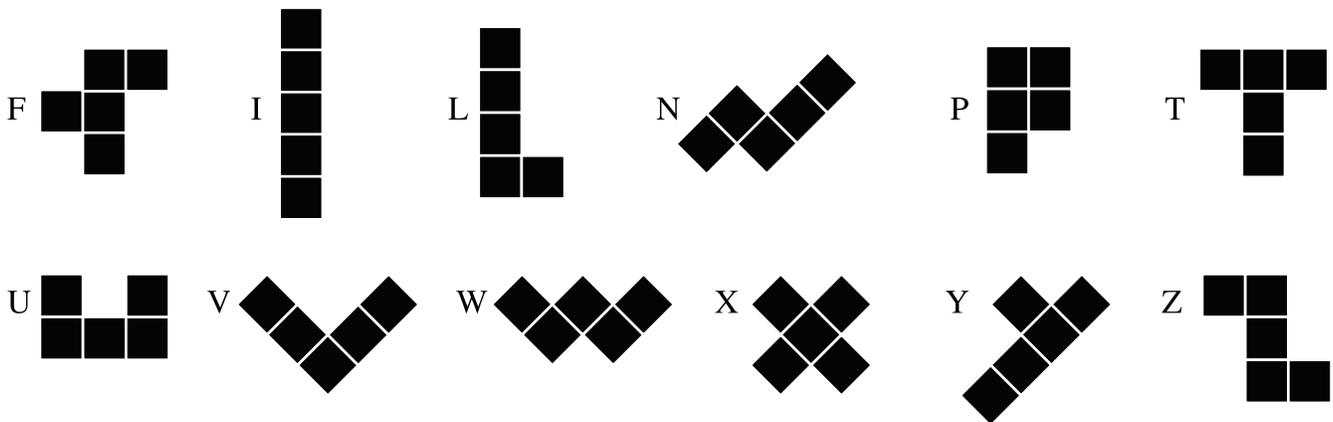
The *Mathfinder* van provides students with hands-on mathematics experiences. Students participate in a lively assembly, explore an interactive exhibit area and receive a 45-minute hands-on lesson. Our goal is to foster an interest in science, technology and mathematics.

We encourage you to talk about our visit and spend some time investigating more math topics together. The activities on this page are designed for you to do with your family and friends. They require few materials and are easy to do.

~Science On Wheels Teachers

## Make Your Own Pentominoes

Pentominoes are groups of 5 blocks that all touch at least one other block along a full side. Pentominoes can be arranged into shapes and letters.



### Procedure:

- On a sheet of cardstock, draw a 1" square. Cut out the square and use it to trace out the 12 pentominoes pictured above.
- Cut out the pentominoes. Try to arrange some of them into a square or a rectangle. What other pictures can you make? Try making a 3-D set of pentominoes using wooden cubes and wood glue.

### Materials

- ruler
- pencil
- scissors
- cardstock

# Game of Nim

Try out this ancient Chinese game and see if you can find any strategies that will help you win.

## Procedure:

- Lay out 20 counters.
- Two players take turns picking up counters. During each turn the player may take one, two or three counters.
- Continue picking up counters until they are all gone.
- The player who picks up the last counter loses the game.
- Can you find any tricks to winning the game?
- Try the game with a different number of counters. Are there any differences when you play with more than 20 counters?



## Materials

- 20 counters or coins

12,321

# Palindromes

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Palindromes are numbers that are two digits or longer and are the same forwards or backwards, like 757 or 12,321.

## Procedure:

- Take any number two digits or longer and write it on your paper. Try 47.
- Then reverse that number and write it under your first number. In this case it will be 74.
- Add the two numbers. In this example the answer is 121. You've found a palindrome!
- Make other palindromes. Sometimes it takes more than one step.

Words can be palindromes too. Like "pop" or "radar." Or even groups of words like "NO LEMON, NO MELON." Make up your own word and number palindromes and share them with the people you live with.

o	47
	+74
	-----
	121
o	48
	+84
	-----
	132
o	+231
	-----
	363

## Materials

- pencil and paper

## Resources

*Exploratorium Magazine*, Vol. 19, No. 3, Fall 1995  
*Exploratorium Science Snacks*, [www.exploratorium.org](http://www.exploratorium.org)  
*Family Math Sampler*, EZUALS Program, Lawrence Hall of Science  
*Family Math*, by Jean Kerr Stenmark, Virginia Thompson and Ruth Cossey  
*Fractals*, *The Patterns of Chaos* by John Briggs, 1992

## Credits

### Science On Wheels Staff

Jen Ownbey  
 Karrie Berglund  
 Melissa Thompson

### Graphic Designer

Katie Dresel

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 200 Second Avenue North • Seattle, WA 98109  
 206-443-2001 • [pacificsciencecenter.org](http://pacificsciencecenter.org)

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