# Mathemagic! 

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Level: All Grades
Concept: Problem Solving
How to play: Watch it done

1) The magician will lay out 4 cards face up in a row, then place another 4 cards face up in a second row, and repeat until there is a 4 by 4 grid of 16 cards face up as shown. Set the remaining cards aside.
2) A volunteer will be asked to choose a card and identify only the column where the card is located.
3) The magician will collect the cards by column, then lay them out in rows of 4 as before.

4) The volunteer will again be asked to identify the column where their card is located.
5) The magician will name their card.

## Why it works:

The magician asks the volunteer to identify the column where the card is located. The magician picks up the cards by column (remembering which column the card was in) then places them back down in rows. This is the equivalent of rotating the grid of cards by $90^{\circ}$ or switching the rows and columns. (Compare this picture with the one above.)

Now the magician knows what row the card is in. When the volunteer identifies the column the card is in now, the magician is able to use the intersection of the two "columns" to locate the card.


## Change it up:

Try this trick with a different sized grid, or by asking for rows instead of columns.

