**Magic and Science or Math**

Using a few magic tricks, number puzzles, or optical illusions can be useful as a fun introduction to the scientific method and inquiry. Discussing science versus superstition would be another avenue for this topic.

**Card Trick from ED 370**

**Hocus Pocus**

Source: Einhorn, N. 2005. *The practical encyclopedia of magic.* London: Anness Publishing Company, pages 50- 51.

1. This trick will use 21 cards.

2. The first time, holding card deck face side down, deal 3 cards face up from left to right;

 repeat this 6 more times building on the first 3 cards. You will have 3 columns of 7 cards

 each.

3. Ask the spectator to choose a card and ONLY tell you which column it is in. (If it is a child

 who might forget, ask him/her to write his/her choice on a piece of paper as you turn away).

4. Pick up one of the other columns (face up), then the chosen pile and place it face up on top.

5. Finally, pick up the last column and place it on top (always face up) of the chosen pile. Be

 careful to NOT mix up the cards. The pile with the chosen card should be in the middle.

6. Now, still holding cards face up, deal 3 cards from the top from left to right, continue dealing

 until you have 3 columns of 7 cards each.

7. Now ask the spectator to again tell you which column contains his/her card.

8. As before, pick up all 3 columns, placing the chosen column between the other two.

 Everything is face up and kept in order.

9. Repeat the task of forming 3 columns of 7 cards each one more time. (You have done this a

 total of 3 times).

10. Again, pick up all 3 columns, placing the chosen column between the other two and being

 careful to not mix up the cards.

11. Turn the cards face down and say you need to say the ancient magic words “Hocus Pocus”

 to find the selected card. Deal the cards onto the table, spelling out loud one letter for

 each card: H-O-C-U- S-P-O-C-U-S.

12. The very next card will be the one selected. Ask for the name of the chosen card first, and

 then turn the next card over.

\* The principle and method are mathematical. The selected card will always be the eleventh

 card down from the top of the face-down packet.

**Math Puzzle: Brothers/Sisters/Grandparents**

Source: National Science Center. (n.d.) Is *it math or magic?* Augusta, Georgia: National Science Center.

 Available at [www.NationalScienceCenter.org](http://www.NationalScienceCenter.org) (Includes 2 math puzzles on this page).

Ask each student to follow these steps:

1. Write the number of brothers you have (living or dead).

2. Multiply by 2.

3. Add 3.

4. Multiply by 5.

5. Add your number of sisters (living or dead).

6. Multiply the result by 10.

7. Add the number of living grandparents you have.

8. Add 125.

9. Subtract 275.

10. Students should have a 3 digit number. The hundreds column is how many brothers, the tens

 column number of sisters, the ones column number of living grandparents.

* Why does this work?
* Let's use algebra to explain it. Source: [www.pleacher.com/mp/puzzles/tricks/brosis.html](http://www.pleacher.com/mp/puzzles/tricks/brosis.html)

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| --- | --- |
| 1. Take the number of brothers that you have.  |   Let x = the number of brothers.  |
| 2. Multiply by 2.  |   Then we get 2x  |
| 3. Add 3.  |   We have 2x + 3  |
| 4. Multiply by 5.  |   Now we get 10x + 15  |
| 5. Add the number of sisters.  |   Let y = number of sisters  Now we have 10x + y + 15  |
| 6. Multiply by 10.  |   We obtain 100x + 10y + 150  |
| 7. Add the number of living grandparents.  |   Let z = number of living grandparents  We get 100x + 10y + z + 150  |
| 8. Add 125  | We get 100x + 10 y + z + 275 |
| 9. Subtract 275.  |   We get 100x + 10y + z   so the hundreds digit is the brothers  the tens digit is sisters  and the units digit is grandparents  |

**It’s Always 5!**

1. Pick any number (Depending on grade say 1-10, 1-100, or any number or high school).

2. Double it.

3. Add 10.

4. Divide by 2. Subtract the original number. \* The answer is always 5! Again, this can be explained

 using algebra.