



Math Magic

-Incredible-



Educational Goals

- ❖ Develop logic
- ❖ Learn a magic trick
- ❖ Show the fun side of math
- ❖ Develop the ability to spot the constant element in a mathematical situation

Key Features of the Targeted Competencies

- ❖ Break down the elements of a situation/problem (C1)
- ❖ Model the problem (C1)
- ❖ Apply different strategies to create a solution (C1)
- ❖ Validate the solution (C1)
- ❖ Establish conjectures (C2)
- ❖ Apply mathematical concepts and processes (C2)
- ❖ Perform proofs (C2)

Concepts Used

- ❖ Arithmetic operations (addition, subtraction)
- ❖ Natural numbers: counting, numbering, equivalent expressions, patterns

Materials

- ❖ Video of the trick
- ❖ 1 deck of cards per group
- ❖ Paper and pencils

Targeted Academic Level



Targeted Competencies



Mathematical Field Concerned



Suggested Teaching Method



Time Required

Approximately 30 minutes



Suggested Process



Step 1: Introduction (2 minutes)

If you are comfortable performing the trick yourself, begin with Step 2. Play the video of the magic trick (www.amazingmaths.ulaval.ca).

Step 2: Find solutions (10 minutes)

Show the video a couple more times, or perform the trick yourself so that the students can take note of the magician's movements and be able to recreate them. Let them use their judgement to decide what parts of the trick are important and what parts are unnecessary for the trick to work.

Place the students in pairs and have them try to solve the trick.

Note: Spell "incredible" on the board, to avoid confusion on the spelling.

Hints for students:

- Ask them to think about where the chosen card is located within the half deck.
- Have them consider a way to track the position of the chosen card (e.g., flip that card over within the stack of cards).

Step 3: Share solutions (15 minutes)

Return to a whole group, and have groups share their thinking and what they tried.

By referring to the *Incredible* Explanation Sheet, reveal and explain the solution of the trick to your students. (If any students have successfully solved the trick, it would be preferable to allow them to recreate the trick for the class while explaining their solution.)

Step 4: Recreate the Magic Trick (5 minutes)

If the students were initially unsuccessful in solving the trick, they may want time to recreate it now that they have seen the solution.

Short on time?

→ Show the video of the trick at the end of class. Let your students try and find the solution as homework. Show the solution at the beginning of the next class.

→ If you have 15 minutes, show the video and have one student try and do the trick at the front of the class. The other students can help, and if they're having trouble you can help them by using the Explanation document of the trick. Initiate and guide a discussion about the trick. After a couple minutes, explain the solution.