



MATHEMAGIC

- THE REBEL CARDS -



Educational Goals

- ❖ To develop logic.
- ❖ To highlight the playful potential of mathematics.
- ❖ To bring the student to recognize reverse operations and neutral elements in the manipulations.

Key Features of the Targeted Competencies

- ❖ To decode the elements of the situational problem
- ❖ To model the situational problem
- ❖ To apply different strategies to work out a solution
- ❖ To validate the solution
- ❖ To define the elements of the mathematical situation
- ❖ To mobilize mathematical concepts and processes appropriate to the given situation
- ❖ To justify actions or statements by referring to mathematical concepts and processes

Concepts Used

- ❖ Symmetry
- ❖ Parity
- ❖ Reverse operations
- ❖ Neutral elements (in the manipulations)

Materials

- ❖ Magic trick video
- ❖ Sheets of paper
- ❖ Pencils
- ❖ One deck of playing cards per team

Targeted Academic Levels
Grades 7 to 11

Mathematical Field Concerned



Suggested Teaching Method



Time Required
Approximately 45 minutes



SUGGESTED PROCESS



Step 1: Introduction (5 minutes)

Play the magic trick video once (www.amazingmaths.ulaval.ca).

In *The Rebel Cards* Explanation Sheet, you will find the steps to follow if you wish to perform this trick yourself with your students rather than playing the video.

Step 2: Recreate the magic trick (10 minutes)

Place the students in teams of two: one plays the role of the magician and the other plays the role of the spectator. They must recreate the manipulations from the video.

To do that, present the video again a few times so that the students realize and take note of the manipulations the magician makes the spectator do. If they cannot manage to recreate the trick simply by watching the video, you can help them by referring to the suggested process of the magic trick in the Explanation Sheet.

Step 3: Find the solution (20 minutes)

Place the students in pairs so that they can search for the solution. You can mention to the students that because the trick works every time, elements that depend only on the spectator should not influence the outcome. Why is that?

To guide them in their solution, you can encourage the students to analyze each of the transformations that the pack of cards undergoes, and to look for what is really changing and what is constant each time. More specifically, you can show students that separating and joining the pack by closing it like a book at the end of the trick is actually the opposite manipulation of the one at the beginning when you drop and turn over every other card.

Step 4: Reveal the solution (10 minutes)

Refer to the Explanation Sheet of *The Rebel Cards* magic trick.