



Mathemagic

– The Truth Comes Out of the Pack –



Educational Goals

- ❖ Develop logic
- ❖ Develop the ability to spot a constant element in a mathematical situation.
- ❖ Exploit the use of graphs to represent situations.

Key Features of the Targeted Competencies

- ❖ To decode the elements of the situational problem
- ❖ To represent the situational problem by a mathematical model
- ❖ To elaborate a mathematical solution
- ❖ To validate a solution
- ❖ To issue conjectures
- ❖ To build and operate networks of mathematical concepts and processes
- ❖ To realize proofs or demonstrations

Concepts Used

- ❖ Graphs
- ❖ Features

Materials

- ❖ Magic trick video
- ❖ 8 playing cards per group
- ❖ Paper and pencils

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 “The Truth Comes Out of the Pack” Explanation Sheet, you will find the steps you need to follow to perform this trick with your students rather than playing the magic trick video.

Step 2: Recreate the magic trick (10 minutes)

Place the students in pairs: one plays the role of the magician and the other plays the role of the spectator. They must recreate the manipulations performed in the video.

To do this, present the video a few more times so that the students can take note of the manipulations of the magician and the spectator. You may also let the students know that the cards can be shuffled, even if they are not shuffled in the video. Encourage the students to try to do it many times by using different cards and by saying the truth or lying. If the students cannot manage to recreate the trick using only the video, you can help them by using the suggested process of the magic trick in the Explanation Sheet.

Careful: For this trick, being able to recreate the trick does not mean we understand it.

Step 3: Find the solution (25 minutes)

Ask the students to try to find the solution while keeping the same groups as the previous step.

To help them, replay the video and guide their reasoning by attracting their attention on what remains constant regardless of the name of the card that the spectator pretends to have: what is the shortest name? The longest? Then what changes? What position holds the spectator’s card the entire time? Does that change depending on the word being spelled? The students must not hesitate to use the graphs or to do the manipulations with the target card turned over to follow it.

In grade 11, we can suggest that students consider each manipulation as a function that associates a position with each map. The magic trick can then be seen as a composition of functions.

Step 4: Reveal the solution (5 minutes)

Refer to the “The Truth Comes Out of the Pack” Explanation Sheet.