



MATH MAGIC

-MAKING 10-



Educational Goals

- ❖ Develop logic
- ❖ Learn a magic trick
- ❖ Show the fun side of math
- ❖ Present a situation where the associativity of addition is used

Key Features of the Targeted Competencies

- ❖ Break down the elements of a situation/problem
- ❖ Model the problem
- ❖ Apply different strategies to create a solution
- ❖ Validate the solution
- ❖ Pinpoint the important elements of a mathematical situation
- ❖ Apply the appropriate processes and concepts for the situation

Concepts Used

- ❖ Properties of natural numbers (complementarity)
- ❖ Arithmetic operations (addition, subtraction)
- ❖ Properties of addition (associativity)

Materials

- ❖ Video of the trick
- ❖ 1 deck of cards for every 2 groups (1 group uses the red cards, the other black cards)
- ❖ Paper and pencils

Recommended grade



Field of Math



Suggested Teaching Method



Time Required

About 45 minutes



Suggested Process



Step 1: Introduction (5 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 (15 minutes)

Once the students have observed the trick several times, place them in pairs and allow them time to try recreating the trick on their own.

Note: Let the students know that the magician does not simply memorize every card dealt and state the two cards that were not dealt.

Student hints:

- Ask them to think about the relationship between the two piles left at the end and the two hidden cards. *For example, if a 4 and a 7 are showing on the remaining piles then the spectator has a 6 and a 3.*

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 *Making 10* 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.)

Encourage them to calculate the sum of all the cards at the beginning of the trick, then see what happens if they remove a card or two. You can also ask them the importance of having the cards sum to 10. Could the trick work if the cards that summed to 9 were removed?

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.