MATHEMAGIC

- DIE AND CLOCK -

Educational Goals

❖ Calculate and interpret an arithmetic mean

❖ Develop logic

❖ Translate a situation using a mathematical concept (equivalence between midpoint and arithmetic mean)

Key Features of the Targeted Competencies

❖ To decode the elements of the situational problem

❖ To represent the situational problem with a mathematical model

❖ To elaborate a mathematical solution

❖ To validate the solution

❖ To form conjectures

❖ To perform demonstrations or proofs

Concepts Used

❖ Arithmetic mean

❖ Arithmetic operations (addition, subtraction, division)

Materials

❖ Magic trick video

❖ 1 clock

❖ 1 die

❖ Paper and pencils

Targeted Academic Level
Grades 7-8

Mathematical Field Concerned

Suggested Teaching Method

Time Required
Approximately 25 minutes

SUGGESTED PROCESS

Step 1: Introduction (5 minutes)

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

In the *Die and Clock* Explanation Sheet, you will find the steps to follow to perform this magic trick yourself rather than play the video presentation. To perform the trick, it is also possible to use the virtual clock available via the following address: https://www.geogebra.org/m/nUd82VtP.

Step 2: Find the solution (15 minutes)

Place the students in teams of 2 or 3. Ask them to discuss to discover the solution.

You can ask them the following questions to feed their reflection:
- What are the manipulations done by the spectator?
- What is the link between the 2 results obtained by the spectator? What is the link with the starting number?
- Why does the magician ask for the sum? What is the link between the sum announced to the magician and the starting number?
- What operations could be done by the magician to arrive to the final result?

Step 3: Reveal the solution (5 minutes)

Refer to the *Die and Clock* Explanation Sheet.