



PUZZLING CARTOON

- THE COLORED CRAYONS -



Educational Goals

- ❖ Develop logic
- ❖ Highlight the playful potential of mathematics
- ❖ Resolution of systems of two equations and two unknown quantities to solve a mathematical problem

Key Features of the Targeted Competency

- ❖ To define the elements of the mathematical situation
- ❖ To mobilize and apply mathematical concepts and processes appropriate to the given situation
- ❖ To justify actions or statements by referring to mathematical concepts and processes

Concepts Used

- ❖ Arithmetic (addition and subtraction)
- ❖ System of two equations and two unknown quantities

Materials

- ❖ Video of the puzzle
- ❖ Sheets of paper
- ❖ Pencils
- ❖ Written copies of the puzzle (optional)

Targeted Academic Level
Grades 9 to 11

Mathematical Field Concerned



Suggested Teaching Formula



Time Required
Approximately 30 minutes



SUGGESTED PROCESS



Step 1: Introduction (3 minutes)

Present the video of the puzzle a first time (www.amazingmaths.ulaval.ca).

A written version of the puzzle is available via the Explanation Sheet. If you believe it is necessary, you can project it or distribute copies to your students.

Present the video a second time to allow the students to thoroughly understand the information.

Step 2: Finding the solution (17 minutes)

Place the students in pairs so they can try to find the solution. Encourage the students to write down the elements of information.

Before they start solving, it is a good idea to remind the students that algebra is very useful in a situation with several unknown quantities.

Suggest representing the number of crayons of each colour with a different variable. For example:

R := number of red crayons

B := number of blue crayons

G := number of green crayons

Y := number of yellow crayons

Since several pieces of information are given, it may be interesting to translate them in mathematical equations according to the variables above.

Also, solely with the meaning of the first 3 affirmations

- ❖ “There are 5 more green crayons than blue crayons.”
- ❖ “There are 3 more blue crayons than red crayons”
- ❖ “There are 2 more red crayons than yellow crayons”

they can deduce a new piece of information linking the number of green crayons to the number of yellow crayons. (If I have 5 more green crayons than blue crayons, if I have 3 more blue crayons than red crayons and if I have 2 more red crayons than yellow crayons, I inevitably have 8 more yellow crayons than green crayons.)

Once they discovered the link with the affirmations, let them deduce the same fact, but rather by looking at the 3 algebraic expressions.



SUGGESTED PROCESS



You can now give them hints to direct their thought process using the following questions:

- ❖ Now that you have two equations linking the number of yellow crayons to the number of green crayons, how can we find the number of yellow crayons and the number of green crayons?
- ❖ Once these two numbers are found, how can we find the number of blue crayons and the number of red crayons?
- ❖ Can we find the total number of crayons?

Step 3: Reveal the solution (5 minutes)

Refer to the Explanation Sheet for the puzzle “The Colored Crayons”.