



Erasmus+  
Programme Your Future



## COMPUTATIONAL THINKING - LESSON SCRIPT

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**Lesson information:**

Subject: MATHEMATICS

Duration: 3 sessions x 50 minutes

Grade: 3th grade of secondary school (students born in 2002)

Age: 14

Topic: Algebra: systems of linear equations

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**The curriculum specifications and requirements:**

BLOCK I: PROCESSES, METHODS AND ATTITUDES IN MATHEMATICS

This block refers to the skills involved in solving problems: analysis, modelling, revision, checking solutions, use of IT, etc.

BLOCK II. NUMBERS AND ALGEBRA

4.1. Students will describe real life situations using equations and systems of equations, will solve them and explain the results.

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**The aims of the lesson:**

Pupils will ...

- ... translate a real situation into algebra expressions.
  - ... identify and apply methods to solve systems of equations.
  - ... identify the conditions that make a system to have no solution.
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**Previous knowledge:**

- How to manage algebraic expressions.
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**The forms of work:**

- Individual work
  - Team work
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**The methods of work:**

- Guided solution of easier problems
  - Problem splitting in smaller problems
  - Brainstorms
  - Graphical analysis
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**Teaching aids:**

- Computer classroom with access to the Internet (one computer for each student).
  - Moodle platform, that is a Learning Management System (LMS), used to provide students with links, worksheets, examples, and extra resources.
  - Teacher computer with projector and interactive board.
  - Activities from web pages: [code.org](http://code.org) and [lighbot.com](http://lighbot.com).
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- Program learnig tool, from scratch.com .

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**The range of using ICT:**

- Getting data from external user.
- Calculations.
- Presenting numerical, textual and graphical information.

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**The course of lesson:**

- **Teacher activities**
- **Pupil activities**
- **The schedule**

1. Introduction (5 min)  
Greeting the pupils, checking registry, explaining the aim of the activity, asking what they know about solving systems of equations.  
Explaining the activity
2. How to solve a typical system of equations (with numbers) (45 min)  
The teacher distributes “Att.5 - Systems of equations worksheet”, and pupils try to solve the typical case individually.
3. General case, and interactive implementation (95 min):  
The teacher shows the “Att.6 - Systems of equations – explanation, and pupils design and implement, in pairs, a programme with scratch to solve the general case interactively.  
Optionally they will consider:
  - Systems with infinite solutions,
  - Systems without solutions.Simultaneously, teacher checks if concepts are applied properly, as well as program algorithms.
4. Evaluation (5 min).  
The programs produced by students are analysed and checked by themselves, so they can compare their solutions. After that, teacher must collect the programs and revise if the concepts are properly applied.

One of the programmes created by pupils can be run at:

<https://scratch.mit.edu/projects/133960929/>

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**Specific information:** Scratch programming environment, from M.I.T.:

- **Programs**
- **Links**

Offline scratch editor can be downloaded at:

<https://scratch.mit.edu/scratch2download/>

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**Attachments:**

- **Worksheets**
  - **Programs**
  - **files necessary**
  - **Etc**
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