



Erasmus+
Programme Your Future



COMPUTATIONAL THINKING - LESSON SCRIPT

Author information:

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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: Use of algebraic models of real situations

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

1.6. Students use approximations by excess or by default, as required, depending on context.

1.9. Students calculate complex expressions with different kind of numbers (integers, decimals, fractions) applying hierarchy of operations properly.

The aims of the lesson:

Pupils will ...

- ... analyse a “real” situation in order to define the parameters involved.
 - ... operate with different kind of numbers.
 - ... decide in which case rounding must be done up (by excess) or down (by default).
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Previous knowledge:

- Hierarchy of operations.
 - Parameters in a rectangle.
 - Equations of movement without acceleration.
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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:	<ul style="list-style-type: none"> - 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 and lighthbot.com. - Program learning tool, from scratch.com.
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The range of using ICT:	<ul style="list-style-type: none"> - Getting data from external user. - Calculations. - Presenting numerical, textual and graphical information.
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The course of lesson:	<ol style="list-style-type: none"> 1. <u>Introduction</u> (5 min) Greeting the pupils, checking registry, explaining the aim of the activity, asking what they know about modelling and solving equations. Explaining the activity
<ul style="list-style-type: none"> ● Teacher activities ● Pupil activities ● The schedule 	<ol style="list-style-type: none"> 2. <u>Model of the situation</u> (30 min) The teacher distributes “<u>Att.7 - The lawnmower worksheet</u>”, and pupils try to define a model of the situation. They must identify relevant parameters and their relations. They should also identify that it is different if length of field is a multiple of width of lawnmower from the case in which doesn’t happen. 3. <u>Interactive programme with scratch</u> (120 min): The teacher shows in the interactive whiteboard “Att.8 - The lawnmower - explanation”, and emphasize the following points: <ul style="list-style-type: none"> - One width isn’t a divisor of the other: rounding must be done. - The time that the lawnmower needs to turn must be considered. Simultaneously, teacher checks if concepts are applied properly, as well as program algorithms. 4. <u>Evaluation</u> (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/135974588/>

Specific information:	Scratch programming environment, from M.I.T.:
<ul style="list-style-type: none"> ● Programs ● Links 	https://scratch.mit.edu Offline scratch editor can be downloaded at: https://scratch.mit.edu/scratch2download/

Attachments:	<ul style="list-style-type: none"> - Att.1 - The lawnmower worksheet - Att.2 - The lawnmower - explanation
<ul style="list-style-type: none"> ● Worksheets ● Programs ● files necessary ● Etc 	