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12 NEW METHODOLOGIES TO LEARN MATHS

“Become European Math Champions”

2020- 1-ES01-KA229-082183

CROATIA - GREECE - ITALY

PORTUGAL - ROMANIA - SPAIN

BY NC ND

TABLE OF CONTENTS

1

CROATIA

Fractions and mixed numbers 1

Fractions: addition and substraction 4

2

GREECE

How to solve a problem 7

Geometry with ICT 9

3

ITALY

Problem solving 10

Math with ICT 13

4

PORTUGAL

Kahoot: mental calculus 14

Measurements and scales 16

5

ROMANIA

the Cube method 18

Addition by one 21

6

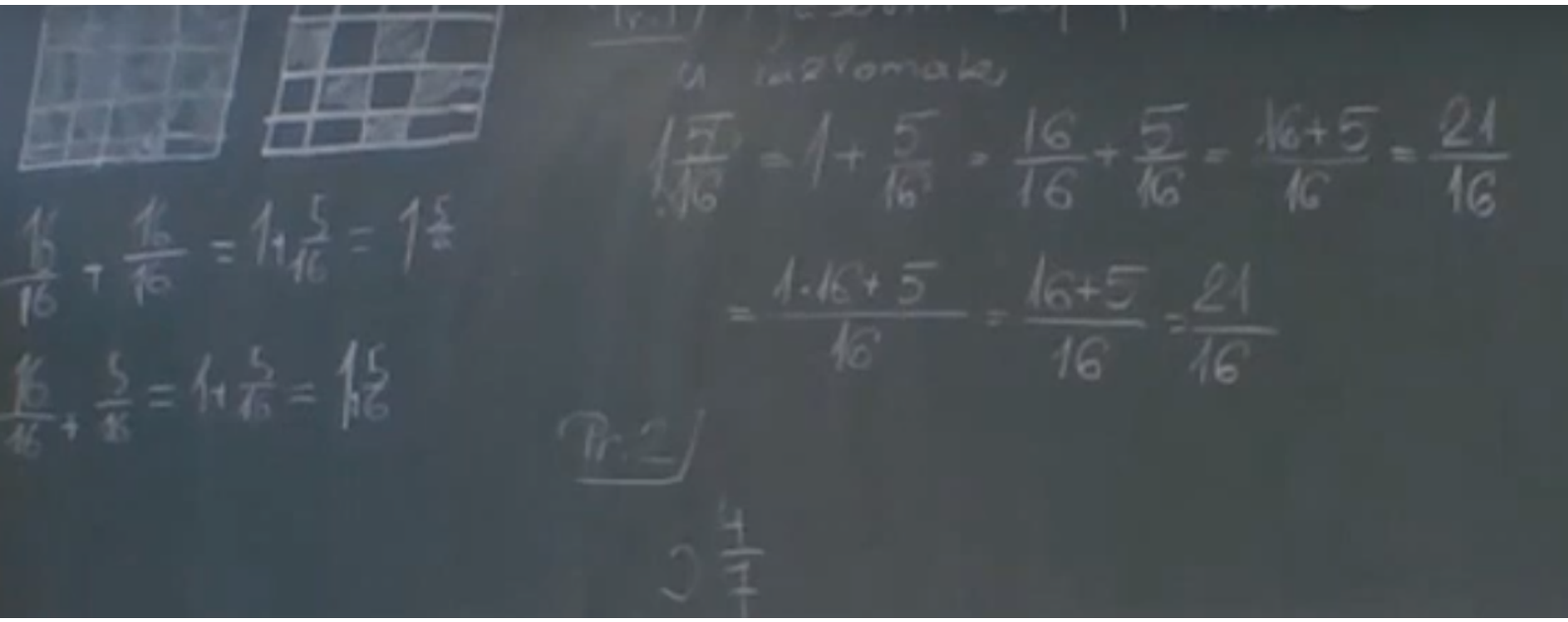
SPAIN

Solving Problems with Cooperative learning 23

Maths, English & P.E. (CLIL methodology) 25

FRACTIONS AND MIXED NUMBERS

CROATIA



EXPLANATORY VIDEO:

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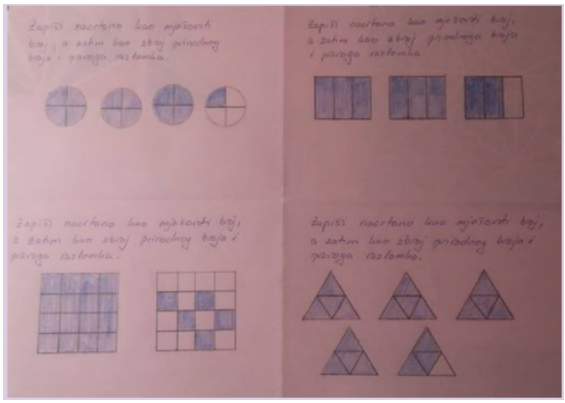
LEARNING OBJECTIVES:

- Distinguish between true and false fractions
- Write a mixed number in the form of an improper fraction
- Write an incorrect fraction in the form of a mixed number

STEPS TO FOLLOW:

Task 1.

Each student receives a slip with one task. The drawing should be written as a mixed number, and then as the sum of a natural number and a real fraction. When he writes down the solution, He throws a piece of paper to one of the students in the class. Students review the slip they received. If they think the task is not solved properly, they come to the board, write the wrong solution and then the correct one. We discuss ways to solve it. We spot mistakes and learn from them.

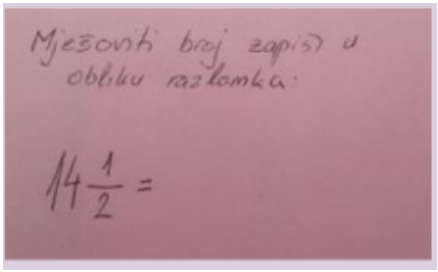


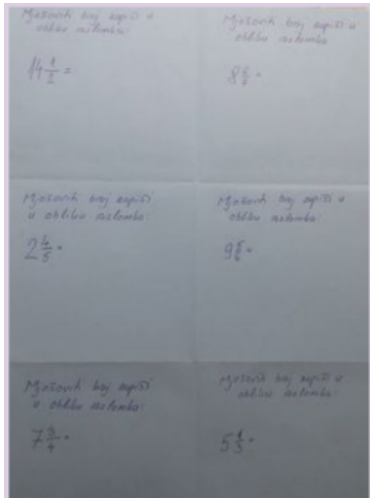
Task 2.

Write the mixed number in the form of a fraction:

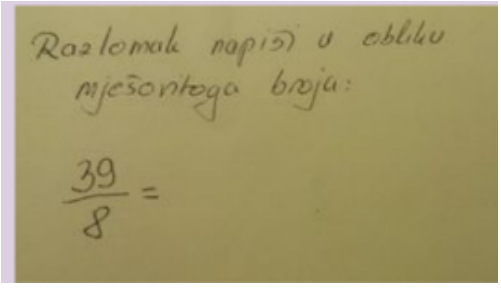
Firstly, I explain to the students how can I turn a mixed number into a fraction and then they solve a few examples on the board. Each student receives a slip of paper with one task. When a student writes down the solution, he/she throws the paper to one of the students in the class. Students review the received slip. If they think that the task is not well solved, they come to the board, write the wrong solution and then the correct one.

We talk about ways to solve this. We notice mistakes and learn from them.





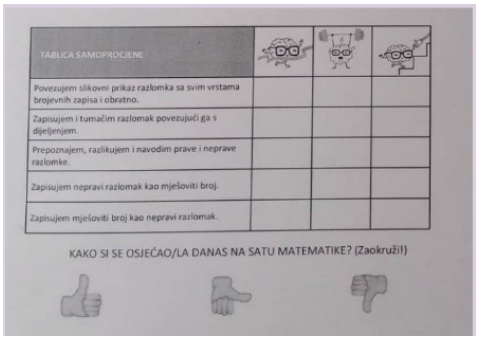
Task 3.



Write the fraction in the form of a mixed number:

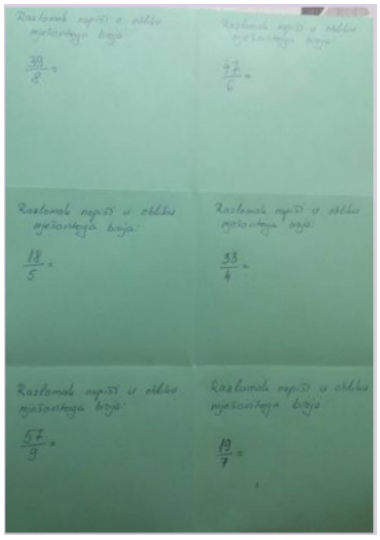
We repeat the method from the previous tasks the example in which I explain how we convert fractions into mixed numbers,.

At the end of the class, students do a self-assessment and assess how they felt during today's lesson.:



TABLICA SAMOPROCJENE			
Povezujem slikovni prikaz razlomka sa svim vrstama brojevnih zapisa i obratno.			
Zapisujem i tumačim razlomak povezujući ga s dijeljenjem.			
Prepoznajem, razlikujem i navodim prave i neprave razlomke.			
Zapisujem nepravi razlomak kao mješoviti broj.			
Zapisujem mješoviti broj kao nepravi razlomak.			

KAKO SI SE OSJEĆAO/LA DANAS NA SATU MATEMATIKE? (Zaokruži!)



Students can additionally do the extra tasks.

Lessons have been held in the classroom for some time, but also via video for students who are in isolation. I filmed the lesson, but the footage is bad and the picture often freezes. Therefore, I posted the video in which is visible that the lesson was held and that the students were actively involved.

STUDENTS LIKE THIS METHOD BECAUSE THEY ARE PUT IN THE ROLE OF A TEACHER (THEY CORRECT OTHER STUDENTS' ASSIGNMENTS).

GOOD LUCK!!

FRACTIONS: ADDITION AND SUBSTRACTION

CROATIA

LEARNING OBJECTIVES:

- Connect the pictorial representation of fractions to all types of number notations and vice versa.
- Write and interprete a fraction by relating it to division.
- Describe and determine the share in a set of similar data.
- Interprete the obtained solution in the context of the problem.
- Add and subtract non-negative rational numbers by applying the properties of arithmetic operations.

STEPS TO FOLLOW:

Students check homework solutions in pairs, and solve some of these tasks on the board.

Students repeat the concept of a fraction, the meaning of the numerator and denominator of a fraction, understanding

the fraction line as a calculation operation of division, and fractions as quotients of two numbers.

FRACTIONS

The numerator of the fraction shows how many parts we are looking at.

The denominator of a fraction shows how many equal parts we divide the whole into.

$$\frac{1}{5}$$

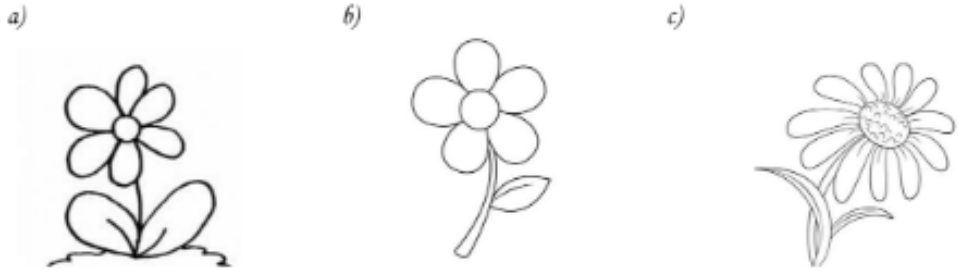
NUMBER

FRACTION LINE

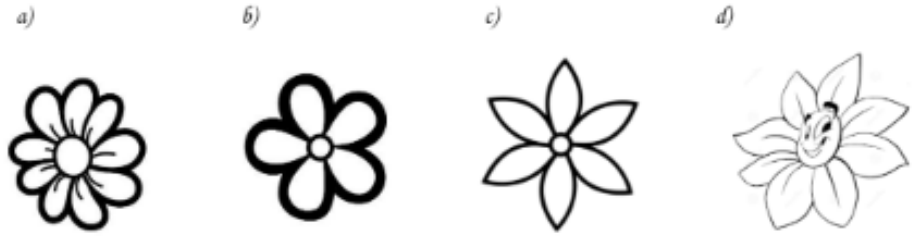
THE DENOMINATOR

Task 1. In which pictures are 3/8 characters colored? (circle the correct answers)

Task 2. Which of the flowers can we use to color 3/5 of the petals? Color them!



Task 3. For each of the flowers, use a fraction to express which part of the flower is one petal! Write the fraction under the flower!



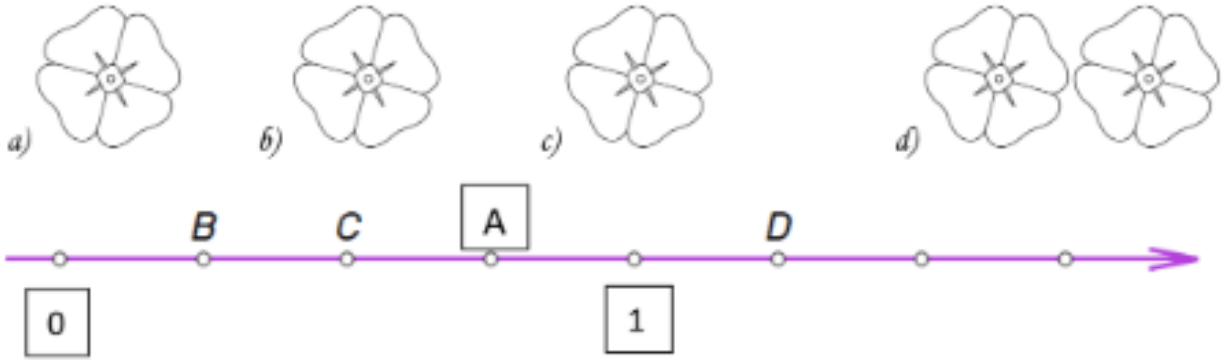
Task 4. Show the drawing in the form of a fraction, and then in the form of a decimal number:

Task 5. Under each flower, write down the number of colored petals in the form of a decimal number and a fraction, and color the petals so that the task is correct!

$0.4 = \frac{4}{10}$ ____ = __ ____ = $\frac{9}{10}$

$0.7 = \frac{7}{10}$ ____ = __ ____ = $\frac{2}{10}$

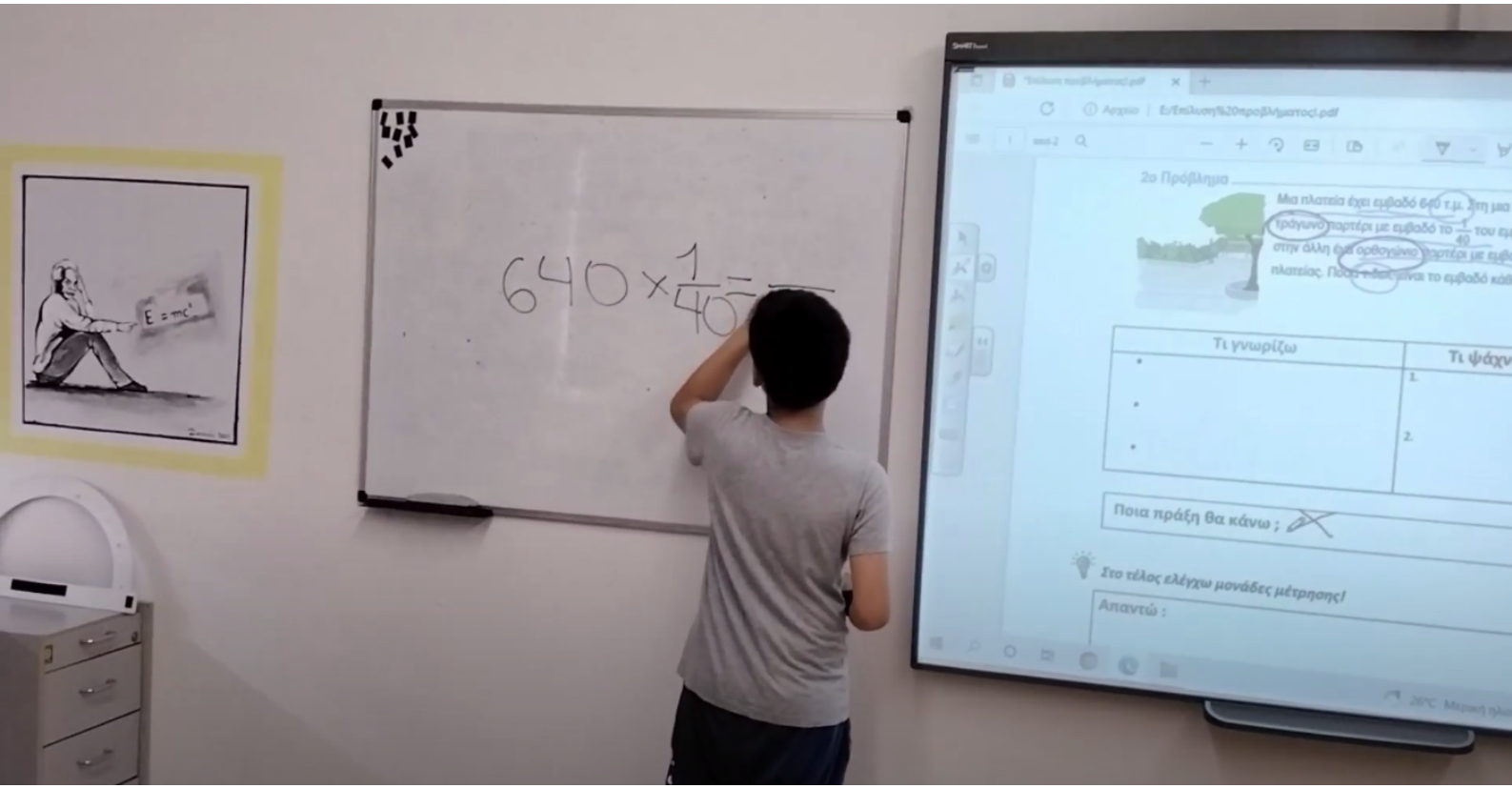
Task 6. Connect the drawings to the points of the number line!



Task 7. Draw a flower, color its petals and present it as a fraction.

HOW TO SOLVE A PROBLEM

GREECE



EXPLANATORY VIDEO: HTTPS://DRIVE.GOOGLE.COM/FILE/D/1_FWGQC_U4SU4ZFGXZ3WLO0CL_OKWVDWD/VIEW?USP=SHARING

LEARNING OBJECTIVES:

- Learn how to solve problems
- Revise units of measures
- Revise on multiplication
- Revise on percentages

STEPS TO FOLLOW:

Step 1

I read the problem very well – at least twice. I make sure I understand it

The Problem

A square has an area of 640 square meters. On one side it has an α square flower bed with an area of 1/ 40 of the area of the square and on the other a rectangular flower bed with an area of 1 /32 of its area square. How many square tenths is the area of each flower bed?

Step 2

I underline the key words that will help me

Step 3

I separate the known elements from the ones I'm looking to find

What I know	What I'm looking for

Step 4

I "break" the problem into smaller questions

Step 5

I do math operations carefully

Which math operation will I do?

Step 6

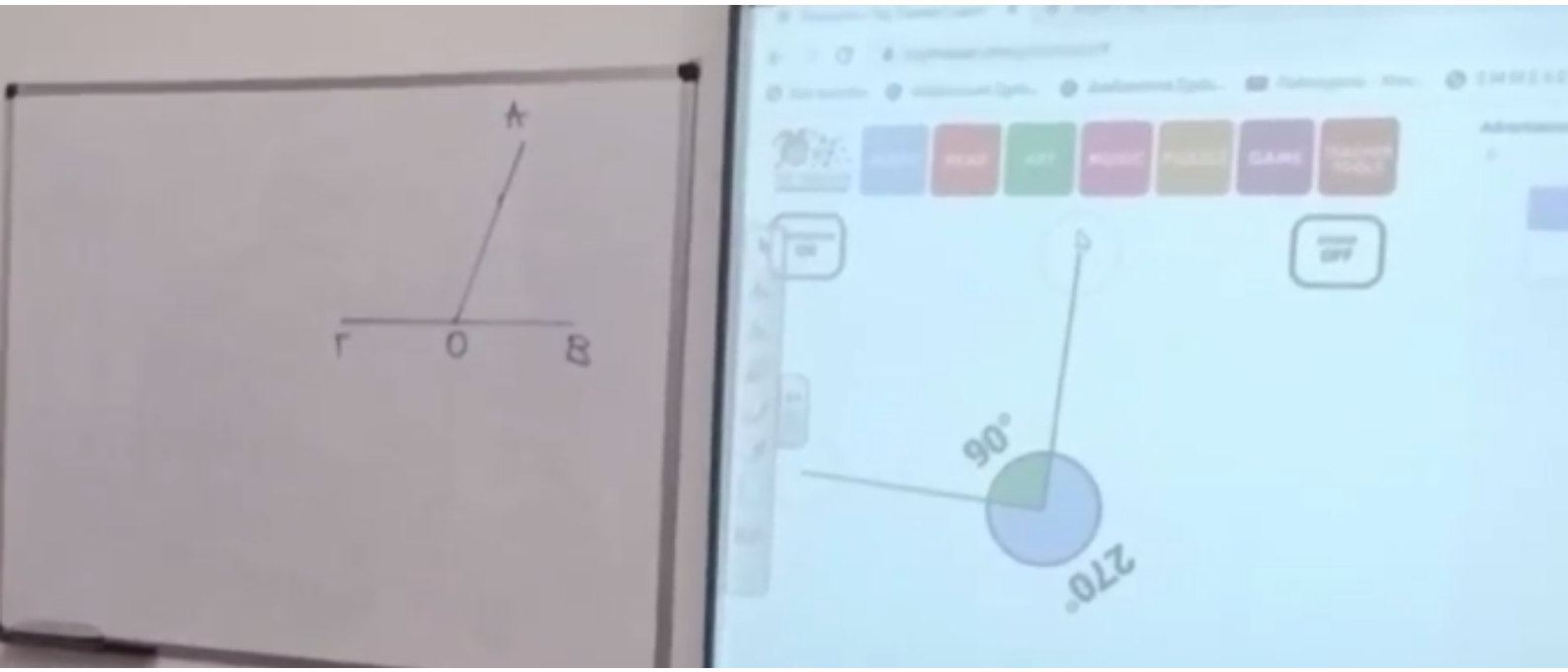
I check the units of measure

Step 7

I verify (where I can) and I write the answer

GEOMETRY WITH ICT

GREECE



EXPLANATORY VIDEOS:

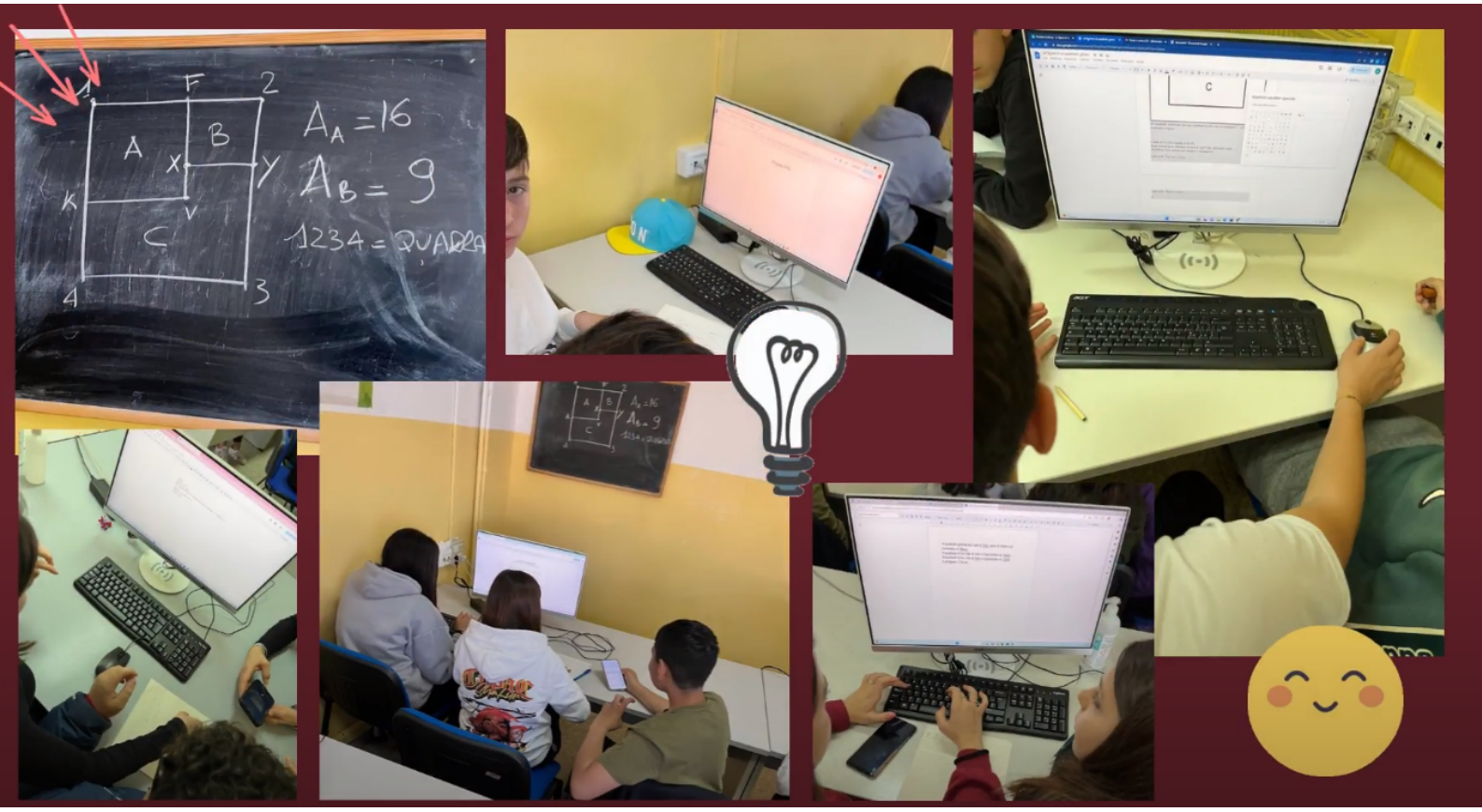
- HTTPS://DRIVE.GOOGLE.COM/FILE/D/1RNEHSVQMYMTDJQ_JKBBS1ZHNUY_ATFY9/VIEW?USP=SHARING
- HTTPS://DRIVE.GOOGLE.COM/FILE/D/1VT33MFBCR65LY0TJAYPNJIBYIBMO5BH5/VIEW?USP=SHARING

LEARNING OBJECTIVES AND STEPS TO FOLLOW:

- https://drive.google.com/file/d/1RneHsvqMyMTdjq_JkbbS1zHnUy_atfY9/view?usp=sharing

PROBLEM SOLVING

ITALY



EXPLANATORY VIDEO:

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LEARNING OBJECTIVES:

Students will be able to iden1fy a problem and engage in problem-solving steps to come up with a soluTIon to strengthen their responsible decision-making competency.

Overview

The proposed problem is the re-elaboration of a question from the INVALSI 2016 test for second-year secondary school students. The aim is to have available a rather open problem, that is solvable in more than one way and not reducible to the execu1on of calcula1ons, but which requires specific arguments, justifications or personal reflec1ons, possibly developable in subsequent questions.

By making a ques1on more open and a little more complex, it is preferably recommended for a group activity, because the collabora1on of several minds makes it easier for different strategies and arguments to emerge, which teachers can solicit and appreciate during the comparison and discussion in class: in this way it is possible to enhance the inventiveness of the students, their ability to choose and the habit of not being too 1ed to known formulas and procedures.

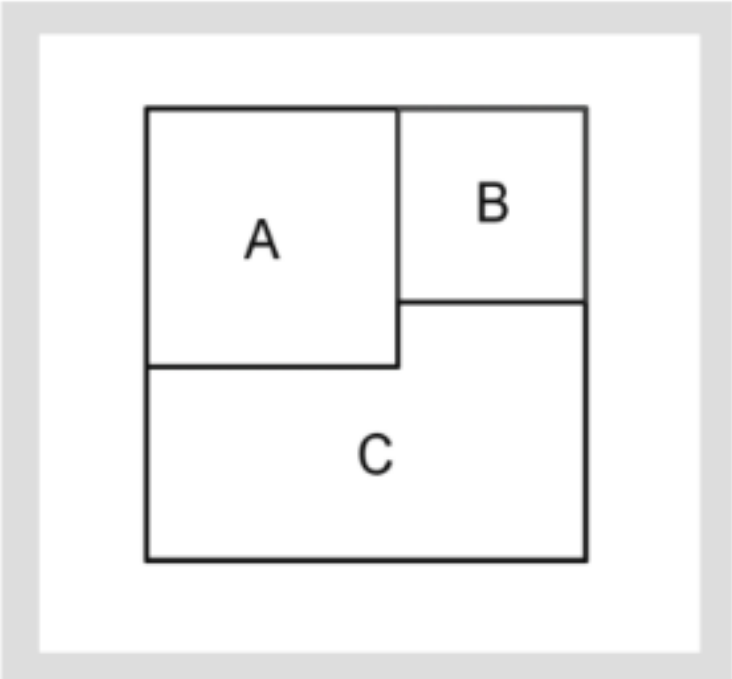
The text of the problem

A square is made up of two squares ***A*** and ***B*** and a polygon ***C,*** as shown in the figure.

The area of ***A*** is 16 and that of ***B*** is 9.

What measurements can you get from this data? (sides, perimeters, areas...)

Justify your calculations with drawings and/or explanations.

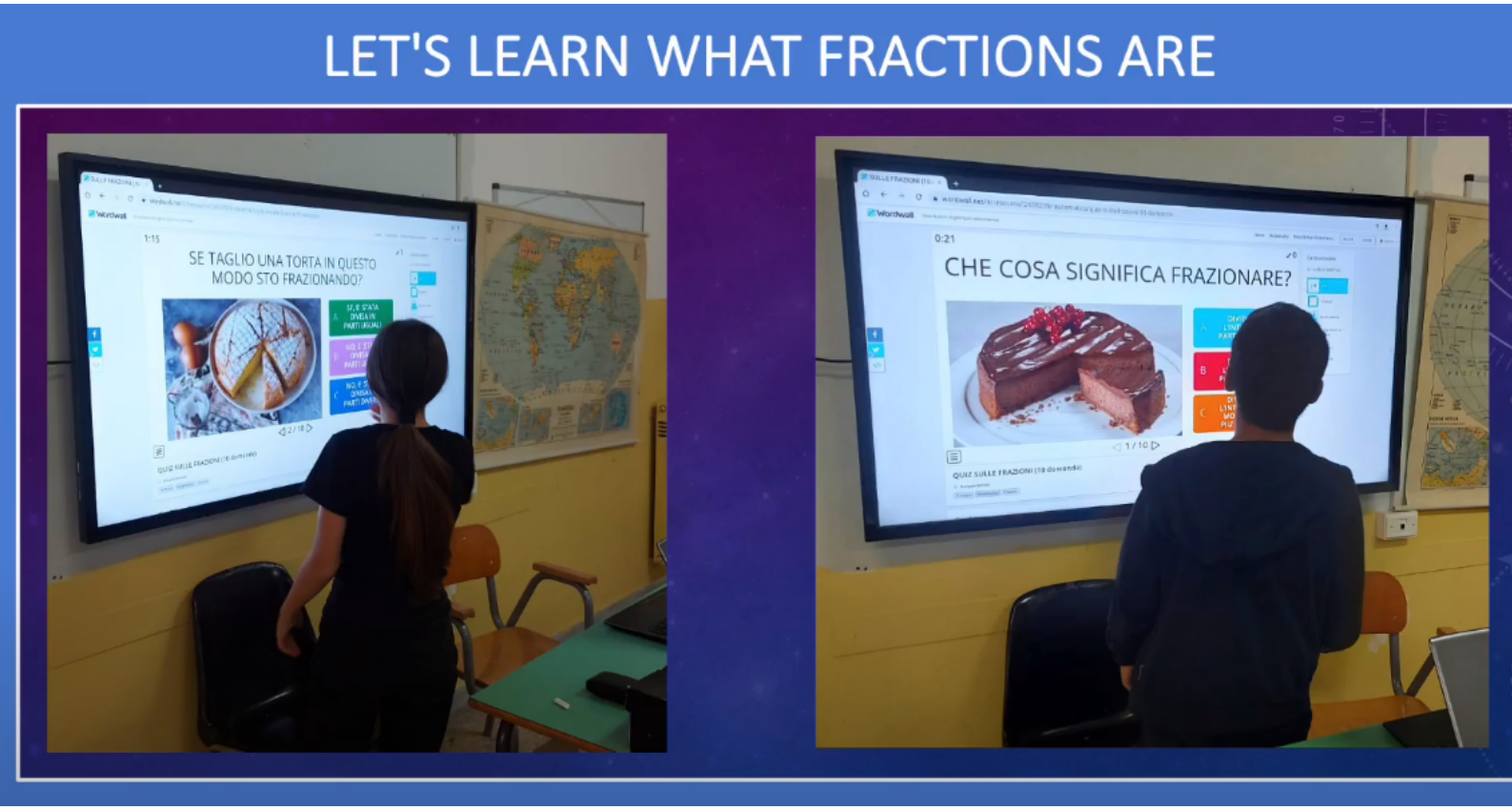


Steps to follow:

The activity can be proposed starting from the first grade of lower secondary school, because the simplicity of the measures allows you to proceed in an elementary way, even if you need a little initiative to give the most appropriate names to the elements in play. Situations of this type, which require the students a little initiative in naming the segments of the figure assigned or better still, in our case, their measurements, could enhance the nominalization process, i.e. the choice of the most suitable nomenclature to face the problem: usually this phase is not present, because the students are limited to assigning procedures to carry out, with already prescribed indications; however, as you know, this is an important moment, because it brings into play and therefore develops initiative and decision-making skills.
The text could arouse some perplexity in the boys, because the absence of units of measurement is not usual in a problem; however, we realize that to answer the question this information is not necessary and it may be interesting, if it does not emerge spontaneously, to point it out to the students at the moment you deem most appropriate.

MATH WITH ICT

ITALY



EXPLANATORY VIDEO:

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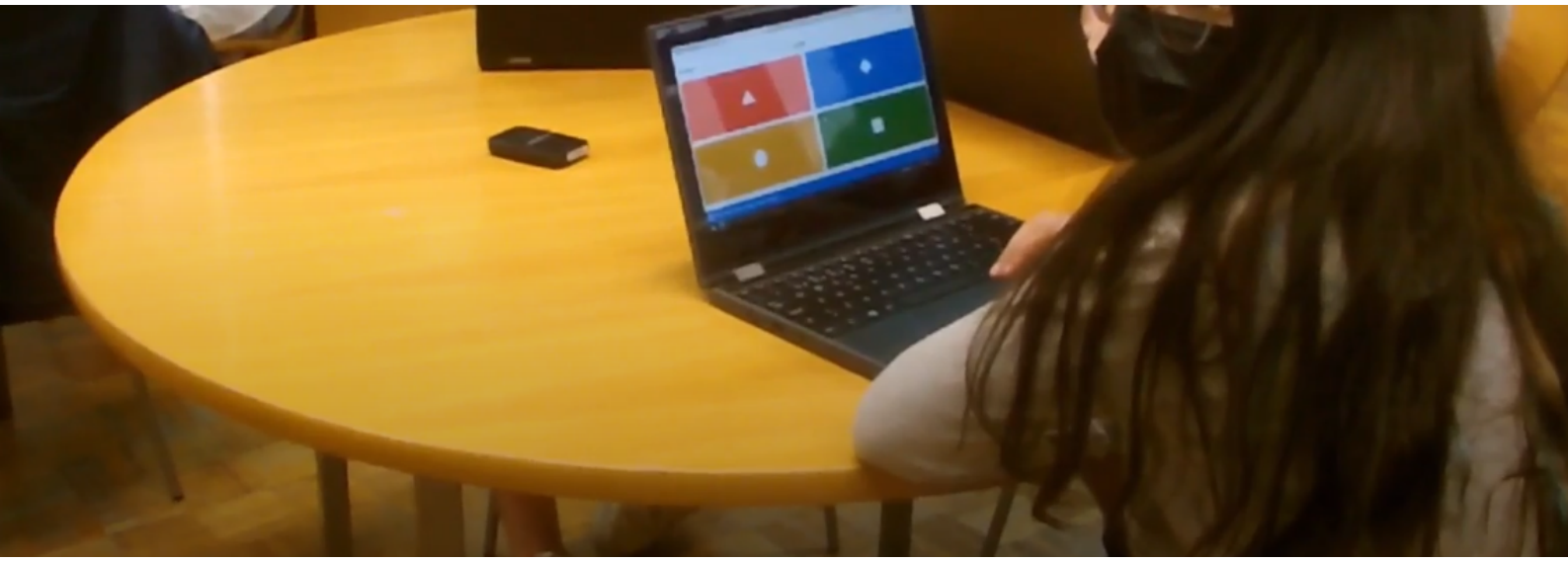
LEARNING OBJECTIVES:

Students will be able to learn about fractions using ICT tools.

KAHOOT: MENTAL CALCULUS

PORTUGAL



EXPLANATORY VIDEO:

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LEARNING OBJECTIVES:

- Develop the mental calculus in the students
- Applications different strategies for performing mental calculation

.

STEPS TO FOLLOW:

- Teachers throughout the year work with students different mental calculation strategies.
- Every month a code is sent to the students of our 4 schools to participate in the contest.
- Students can do the activity anywhere, just need to have a computer/mobile phone/tablet and internet.
- During the activity and at the end the student knows where he is positioned in the league.
- In the month of May the winner of each school year, each school goes to the school head to participate in the championship final.
- In the final of the championship will be determined the winner of each school year (1st Year, 2nd year... 9th grade).

MEASUREMENTS AND SCALES

PORTUGAL

EXPLANATORY VIDEO:

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LEARNING OBJECTIVES:

- Apply the scale measure in a map drawing
- Apply mathematics in concrete situations

.

STEPS TO FOLLOW:

- In math class students will learn how to calculate scales
- In the next lesson the teacher proposes to the students, in groups of 4, to build the map of the classroom and the school playgrounds
- Students will take the necessary measures using traditional technological tools and instruments
- In the next lesson students will perform the necessary calculations according to the measurements they have taken and the scale they have chosen
- Students will then build the map of the classroom and playground using paper, pencils and drawing instruments
- In ICT class students will build the playground and classroom plan on the computer

THE CUBE METHOD

ROMANIA

LEARNING OBJECTIVES:

- To solve tasks in a constant collaboration

.

STEPS TO FOLLOW:

- Students are divided into 6 groups. Each group rolls the dice and will solve one of the six tasks: associate, describe, apply, compare, argue, analyze.
- The children solve the tasks on the sheet by constant collaborating
- A representative of this group presents the exercises solved in his group to his/her colleagues.

ASOCIATI
9 + 1
6 + 4
7 + 1
1 + 4
1 + 2
9+1=10
0
1
2
3
4
6
7
8
9
10

ADDITION BY ONE

ROMANIA

:
EXPLANATORY VIDEO:
HTTPS://DRIVE.GOOGLE.COM/FILE/D/1Q_4JJQ7YPE97HEQ4IDKNDQVOVVNW4OBY/VIEW?USP=SHARING

LEARNING OBJECTIVES:

- to introduce maths terminology related to the topic
- to practice addition within the numbers 0-10

.

AT THE END OF THE LESSON:

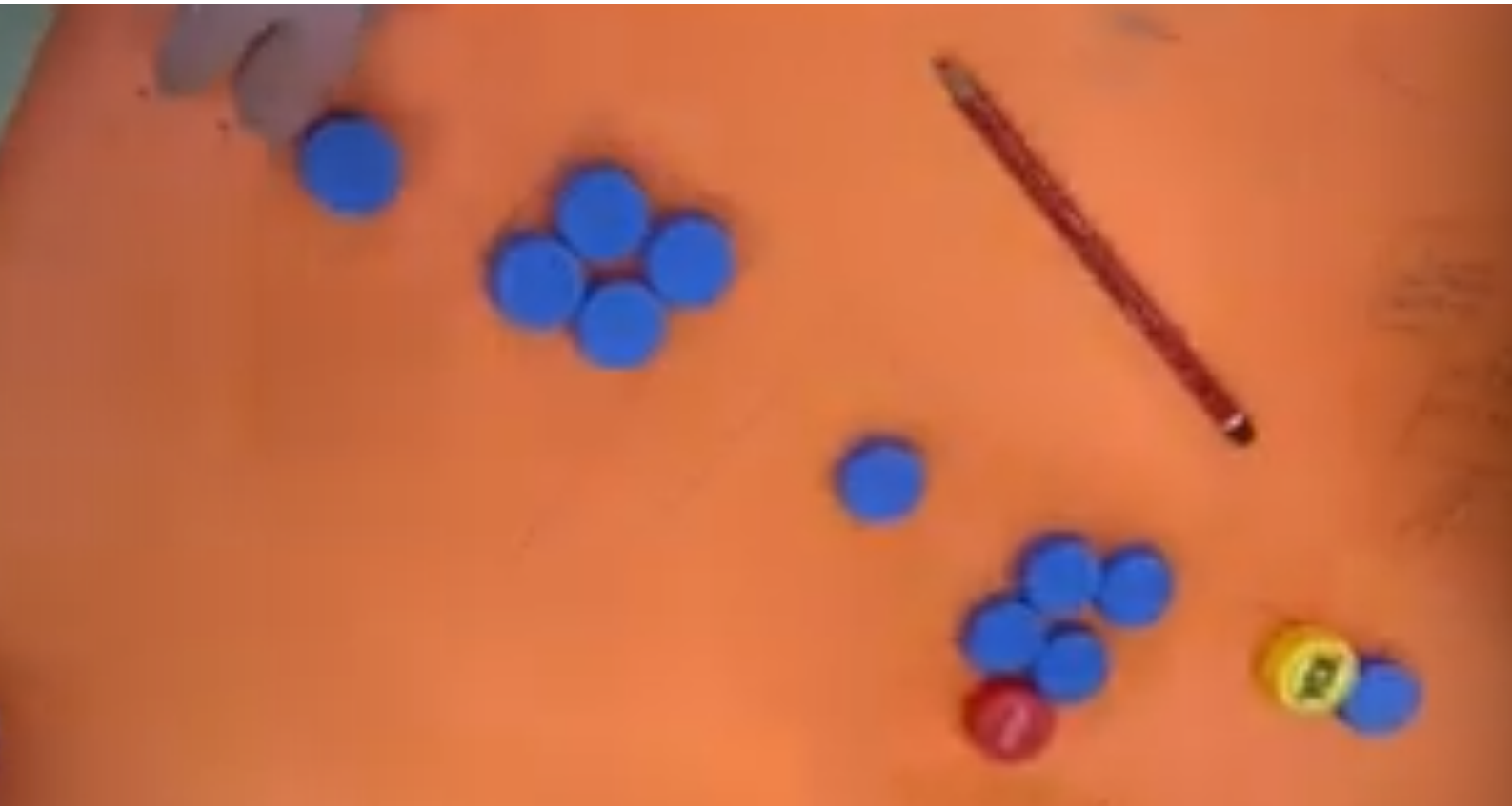
- the students will be capable of recognizing all the numbers from 0-10
- they will be able to operate simple additions
- they will be able to make up problems based on given images
- - they will be able to count forwards and backwards and to order ascending and descending
- the rows of numbers they have been provided with

STAGES OF THE LESSON:

- One group of students receives a set of numbers (0-10) written on snowflakes, which they are supposed to arrange ascending
- Another group is supposed to arrange the numbers 0-10 ascending, from 2 to 2
- The third group receives the numbers 1-9, which they are supposed to arrange descending, from 2 to 2
- After the given time, the teacher checks their answers and gives them feedback.
- The teacher presents some images on the IWB and the students have to identify the correct operation and to write it down in their notebooks. (e.g: 2 flowers and 1 flower is three flowers)
- The next task is about matching a given set of operations with their correct result. The students work in pairs. At the end of the activity, they write down their answers on the board.
- The last moment of the lesson suggests that the students build snowmen from snowflakes, by matching the right number of snowflakes with the number from the snowman's hat.

SOLVING PROBLEMS WITH COOPERATIVE LEARNING

SPAIN



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EXPLANATORY VIDEO:

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LEARNING OBJECTIVES:

- Work cooperatively with other team members to achieve one common goal
- Solve problems of a competence nature
- Trust in the ability and value the contributions of the rest

.

STEPS TO FOLLOW:

- In cooperative groups we have been solving the statements of the mathematical problems. These problems are jurisdictional.
- Each group reads each statement, they read it together, and explain to each other what they have understood.
- In a manipulative way with corks or drawing on wrapping paper, they help each other and solve the problem together. In this case, they give 4 options where only one is correct.
- Once solved, randomly, each group goes out to explain how they arrived at the correct result.

MATHS, ENGLISH & P.E. (CLIL METHODOLOGY)

SPAIN

EXPLANATORY VIDEO:

HTTPS://DRIVE.GOOGLE.COM/FILE/D/1BCZHF5UGQ5TJM0I1VGSDYG2FUHG_FI9I/VIEW?USP=SHARING

LEARNING OBJECTIVES:

- To practice the mental calculation while playing a game.
- To practice the math multiplications through games and movement.

.

STEPS TO FOLLOW:

- The students are divided into two teams.
- Each team lines up about 6 meters from each other.
- Every student has a piece of paper with a result or a math multiplication.
- The teacher is placed in the center of the play area holding a stick, a ball, a bag, etc.
- When the teacher calls out a result or a multiplication, the students who share the result or the multiplication must race to grab the “bag” and get back to their places without being tagged.
- Each time the student makes it home safe, the team receives a point

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