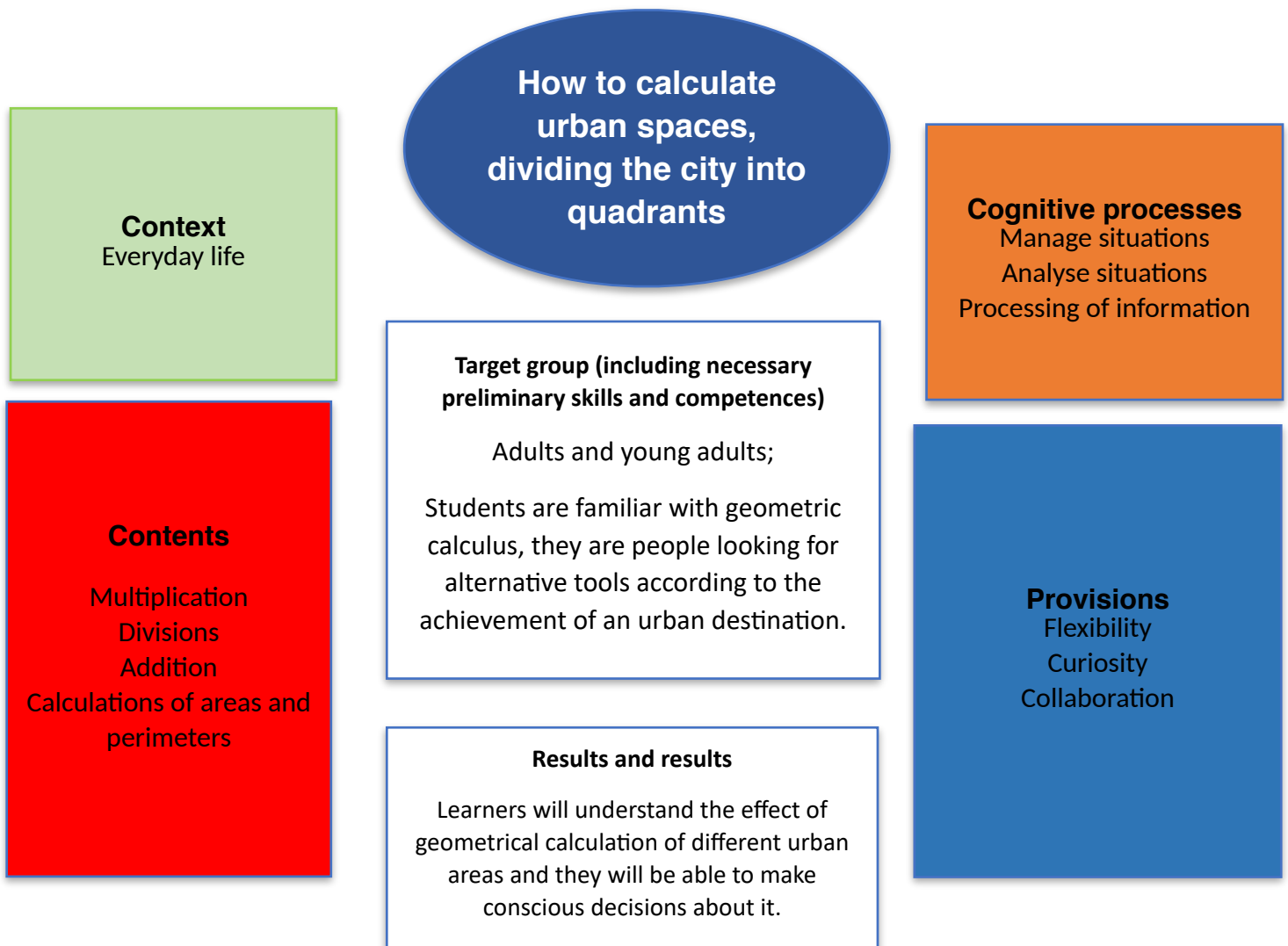**Numeracy** in Practice

URBAN SUBDIVISION

Today, through algorithms and calculations linked to the GPS system, it is possible to reach any point of your urban space, without particular difficulties.
The model below aims to propose a calculation system based on the subdivision of the Roman urbe (*CARDO and DECUMANO*)

Overview "Urban Subdivision"

How to calculate urban spaces, dividing the city into quadrants

Context
Everyday life

Contents

Multiplication
Divisions
Addition
Calculations of areas and perimeters

Target group (including necessary preliminary skills and competences)

Adults and young adults;

Students are familiar with geometric calculus, they are people looking for alternative tools according to the achievement of an urban destination.

Results and results

Learners will understand the effect of geometrical calculation of different urban areas and they will be able to make conscious decisions about it.

Cognitive processes
Manage situations
Analyse situations
Processing of information

Provisions
Flexibility
Curiosity
Collaboration

Numeracy in Practice

Main information

Content	Natural numbers; decimal numbers; calculations of areas and perimeters (generic geometric calculations)
Target group	Adults and young adults; Students are familiar with geometric calculus, they are people looking for alternative tools according to the achievement of an urban destination.
Learning intention	— Numeracy for personal and private purposes — Numeracy to understand the urban subdivision and the toponymy
Duration	3 hours (approximately)
Material and resources	Historical sources relating to the Roman urban subdivision and books and exercises of geometry
Group size	4 students
Problem statement	Finding the correct dimensions of a given urban space involves the knowledge of mathematical/geometric disciplines. This knowledge can be translated into simplified actions based on the structuring of algorithms.
Working questions	- What is an urban area? - What are the systems to calculate the perimeter and the area? - What are the consequences from the point of view of institutional toponymism?
Learning outcomes and results	Students will understand the effect of geometrical calculation of different urban areas and they will be able to make informed decisions about it.
Reference to the National Qualification Frame	

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Working plan

Time (lessons)	Description of content/ activities	Material	Methodical and didactic information
30' +	**1.Discover** This activity is conducted initially simply by guiding the discussion with some questions, in order to evaluate students' knowledge related to the topic. At the end of this phase, the teacher will understand whether or not it is necessary to deepen the concept of urban subdivision.	Slides	Discussion [explicit teaching if need be]
60'	**2. Calculate the spaces** Students are initially asked how to calculate simple areas and perimeters. A brief discussion of the proposed ideas follows and finally, if necessary, the teacher shows, explains and makes comprehensible the mathematical formula to calculate exactly geometric spaces. In closing, different situations are submitted to learners who are asked to calculate an urban subdivision congruent with the data provided.	Situations and calculations consistent with the urban reference axis; calculator	Discussion Collaborative learning Explicit teaching
45'	**3. Evaluate the different proposals** The teacher provides several geometric calculation proposals: then asks students to evaluate the most useful for the purpose of urban subdivision and to discuss together what are the criteria used to make a careful assessment of the issue.	Real urban division situations and reflexes on toponymy Calculator	Collaborative learning (couples)

30' +	**4. Discussion** The Working Groups share the assessments and considerations that emerged during **phase 3.** A phase of exchange of views followed.		Discussion Feedback

Appendix

### 1.Discover

https://www.garmin.com/it-IT/aboutgps/

COS'È IL GPS?

Il GPS (Global Positioning System) è un sistema di navigazione satellitare di proprietà del governo degli Stati Uniti che, attualmente, comprende 24 satelliti operativi. Il GPS funziona con qualsiasi condizione meteorologica, ovunque nel mondo, 24 ore su 24 e non prevede tariffe di abbonamento o costi di configurazione. Il Dipartimento della Difesa degli Stati Uniti (U.S. Department of Defense, USDOD) ha inizialmente mandato i satelliti in orbita per scopi militari, ma negli anni '80 questi sono stati resi disponibili per l'uso civile.
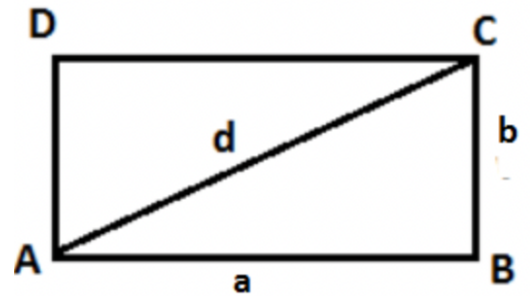
https://www.studiarapido.it/cardo-e-decumano-cosa-sono-e-a-cosa-servivano/
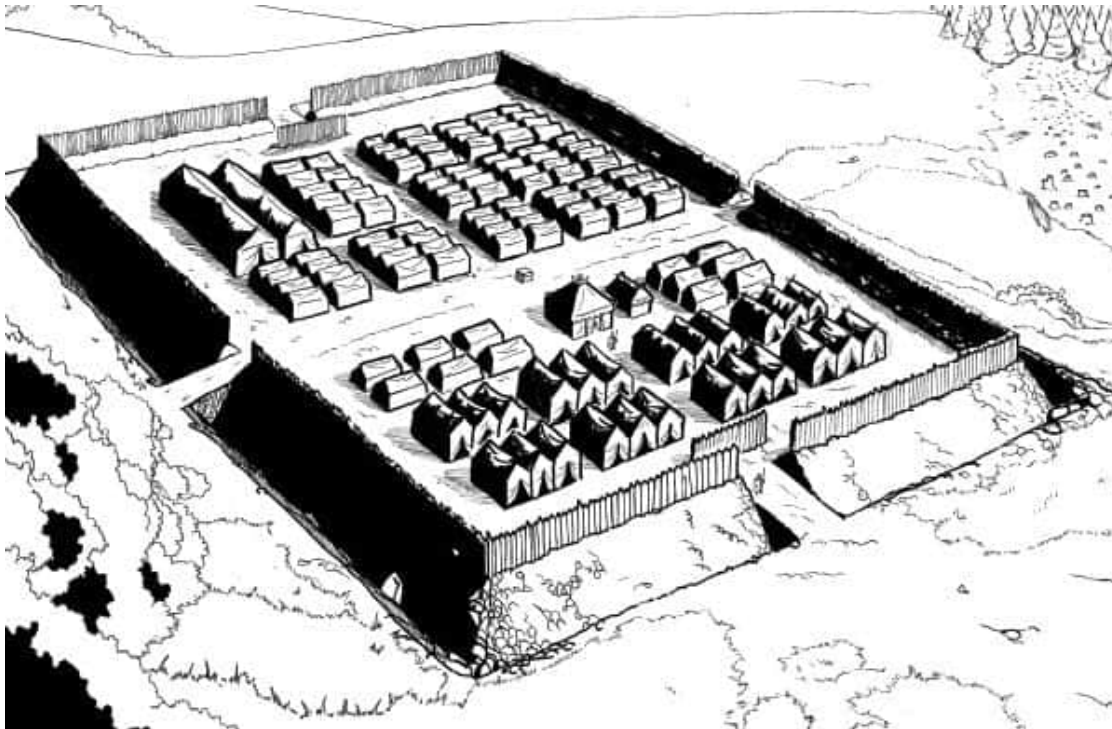
2. Calculate the spaces

https://www.geody.com/geometry/geometria_it.php

AN EXAMPLE OF GEOMETRY PROBLEM:

PROBLEMA 1: UN RETTANGOLO HA LA BASE E L'ALTEZZA CHE MISURANO, RISPETTIVAMENTE, 10 CM E 5 CM. CALCOLA PERIMETRO E AREA DEL RETTANGOLO.

Dati:	Richieste:
Base (*b*) = 10 cm	Perimetro?
Altezza (*h*) = 5 cm	Area?

AN EXAMPLE OF PROBLEM FOR CALCULATING URBAN SUBDIVISION:

"CALCULATE THE AREA DELIMITED BY THE RED SQUARE "

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