THE MEASUREMENT OF QUANTITIES IN THE *SECIMAL* SYSTEM FOR PRIMARY TEACHER TRAINING

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Context

A sequence of 8 sessions of 2 hours each for future primary school teachers (3rd year of university in France) in order to make students rediscover what they will have to teach (in a base different from ten to avoid automatisms) on the number system and all its implications

Natural numbers: coding and opera-

Session 4

Aim (in order to measure magnitudes):

- Make the students create a new sub-unit of measurement or fractional or point writing
- Approximate values of square roots
- Need to build a measuring tool, a graduated ruler adequate for base six system

Magnitudes, real numbers and their approximations

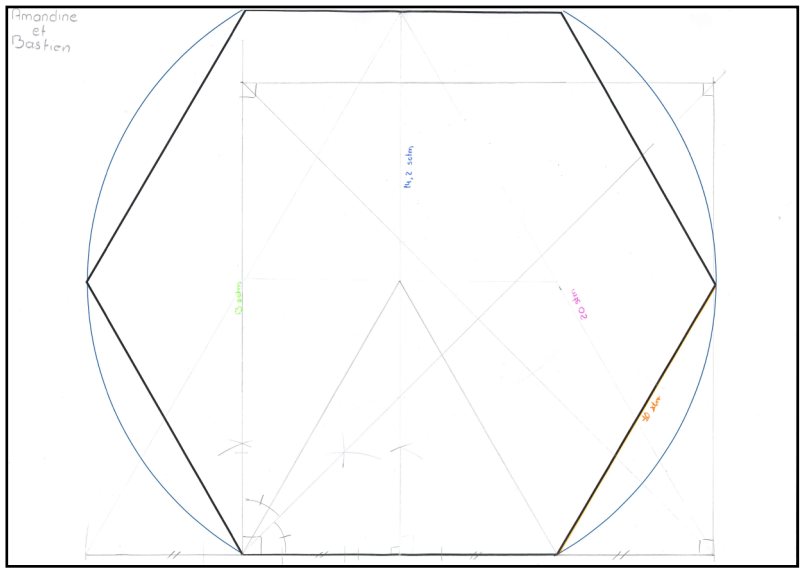
Description of the session

Organisation: 6 groups of 2 or 3 students

Material: A3 sheet on which a regular hexagon of 1 meter perimeter is drawn

Tasks :

- Give the measure of the length of one side of this hexagon (new sub-unit; fractional or point writing)
- Draw, still on an A3 sheets, an equilateral triangle and a square whose perimeter is the same as the one of the hexagon (1 meter)
- Measure the length of their sides
- Calculate the measurement of the area of the three figures



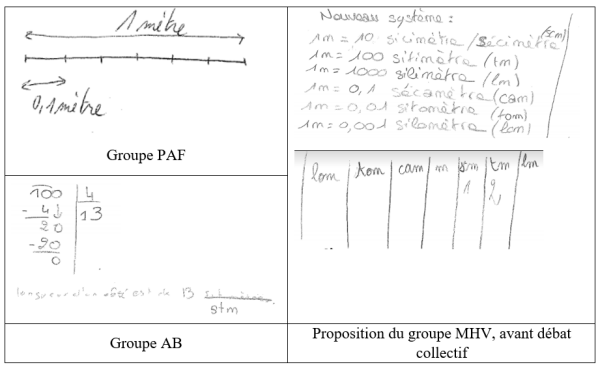
Drawing the triangle and square with lengths and angles

Students' productions

Point writing and sub-unit

The side of the hexagon measure one-sixth of a meter, or 0.1 m or 1 (m/10), m/10

Need of a **new system**

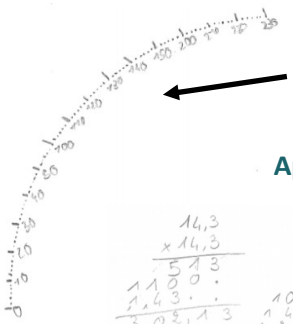


Groupe PAF | Groupe AB | Proposition du groupe MHV, avant débat collectif

Measurement tools

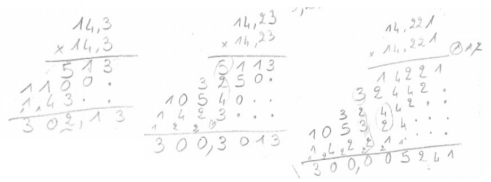
Graduations after teacher's intervention

Intent of a graduate line (VO group)



Building of a protractor (PAF group)

Approximate values



Computations for the square root of 300 by the MHV group (area of equilateral triangle) - a need of an automated **calculation tool** (calculator)

Does the material environment with the students' old knowledge of geometry and rational numbers as well as the new knowledge on the coding of whole numbers in base six constitute a sufficient *milieu* for the emergence of the targeted knowledge?

Conclusion

Objectives are achieved, providing two conditions: (1) allow researcher-group interactions to guide the work but without indicating the knowledge targeted; (2) think about the emergence of knowledge on all groups and not only for each group separately

References

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