



## Lesson scenario Similar triangles – practic aspects

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**Date:** 31.03. 2022

**Grade:** a VII-a

**Subject:** mathematics, geometry

**Lesson thematic:** Similar triangles – practic aspects

**Lesson type:** consolidating knowledge

**Lesson's objectives :**

At the end of the lesson, the student will be able to:

- recognize similar triangles;
- use the fundamental theorem of similarity, Thales converse theorem, triangles similarity cases, formula corresponding to the ratio of the surfaces of similar triangles
- calculate dimensions and surfaces using triangles' similarity.

**Specific key competences from seven grade school curriculum:**

- 1.6. Identifying similar triangles in specific configurations;
- 2.6. Establishing similarity relation between two triangles;
- 3.6. Applying triangles' similarity in geometric configurations to determine legs and angles sizes and area surfaces.
- 4.6. Expressing in mathematical academic language geometric shapes' particularities using the similarity.
- 5.6. Applying triangles similarity in geometric configurations
- 6.6. Implementing strategies to solve tasks using triangles similarity.

**Didactic means:**

Math manual for seven grade; lesson working sheet, colored markers, the ruler, the square, collared pencils.

**Didactic methods:**

Conversation, questioning, solving algorithmically tasks, interactive methods (group working).

**Bibliografy:**

- George Turcitu, Ionică Rizea, Nicolae Ghiciu, Dan Mic, Constantin Basarab, Marlena Basarab, *Matematică 7 Manual*, Editura Radical Drobeta Turnu Severin, 1999;
- Marius Perianu, Ioan Balica, *Matematică, clasa a VII-a, semestrul al II-lea*, Editura Art Educațional, București, 2019;
- Radu Gologan, Camelia Elena Neța, Ciprian Constantin Neța, Gabriela Vrînceanu, *Matematică, Manual pentru clasa a VII-a*, Editura Grupul Editorial Corint, 2019.

**Teacher:** Monica-Dana Izgărian



| Lesson stages:                   | Teacher's activity   | Students' activity   |
|----------------------------------|--|--|
| <b>Organizational moment</b>     | - the teacher forms three groups of students;<br>-the teacher asks students to choose a representative from every study group;   | - students are respecting teacher's instructions.  |
| <b>Catching attention</b>        | - the teacher briefly present lesson's objectives and he writes lesson title on the whiteboard;  | - students are paying attention to teacher's explanations;   |
| <b>Previous knowledge update</b> | - the teacher ask questions related to content from previous lessons: <ul style="list-style-type: none"> <li>• What methods may be used to demonstrate two triangles' similarity?</li> <li>• Which is the fundamental theorem of similarity?</li> <li>• Which are triangles' similarity cases?</li> <li>• Which is the relation between two similar triangles' perimeters and area surfaces?</li> <li>• How may the parallelism of two straight lines?</li> <li>• Which is the converse theorem of Thales?.</li> </ul> | - Students answer to teacher's questions.  |
| <b>Conducting the lesson</b>     | -the teacher gives lesson working sheet to students and asks for group 1 to solve the second exercise, for group 2 to solve the third exercise, for group 3 to solve the fourth exercise from the working sheet.<br>- The teacher invites a representative from every group to explain their solution and to verify the result.  | - students are solving on every group, the task they had distributed;<br>- Every group's representative explains the solution, their approach and their technique. |
| <b>Consolidating knowledge</b>   | - the teacher makes comments on students solutions;<br>- the teacher asks students to make connections between practice and theoretical content;   | - the students follow teacher's explanations, they answer to teacher's questions.  |
| <b>Ensuring transfer</b>         | - the teacher propose as homework the rest of the tasks from lesson's working sheet  | - The students are making notes about the homework in their copybooks.   |



## Lesson's working sheet

1. In figure 1, segments BC and DE are two trampolines fixed on the pillar AD. The two trampolines are situated over a swimming pool. It is known that  $AB = 4$  m,  $BD = 6$  m,  $AC = 6$  m,  $BC \parallel DE$ , A, C and E are colinear points. Calculate the distance between A and E.

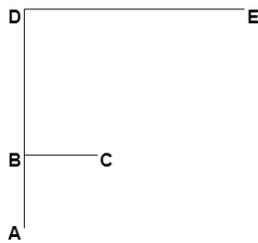


Figure 1

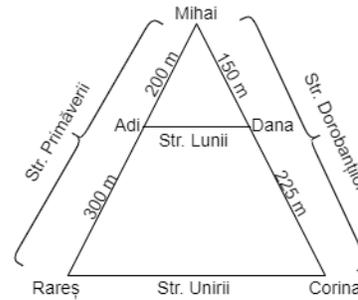


Figure 2

2. In figure 2 are marked the positions of the houses of five students: Mihai, Rareș, Dana, Adi and Corina. Using the distances marked on the drawing demonstrate that the streets „Lunii” and „Unirii” are paralell.

3. In figure 3 representation, CE is building's height, AB and CD are distnces from the ground, to person's eyes and FG is a vertical ruler of 15 cm, so that A, F and E are colinear points. Knowing that  $AB = 1,5$  m,  $BC = 15$  m,  $AG = 50$  cm, calculate building's hight.

4. Mihai and Adi want to calculate the distances from their home to Ionuț's home sitated on the other side of the river. vor să determine distanțele de la casele lor la casa lui Ionuț, care se află pe celălalt mal al râului. Figura 4 presints a schetch of homes layout . To make these calculations they considered as referice points P and R, so that  $PR \parallel MA$ . Using the values on the schetch, calculate the distances MI and AI.

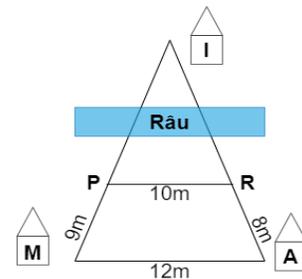
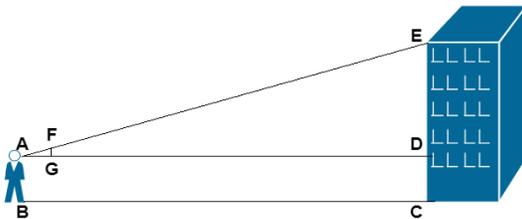


Figura 4



5. Calculate a fountain depth to water level using figure 5 parameters.
6. In figure 6 are two parcels of land ABC and DCE. Knowing  $AB = 8$  m,  $BC = 12$  m,  $CD = 6$  m,  $CE = 9$  m,  $\sphericalangle ABC \equiv \sphericalangle DCE$ , and ABC has the area surface of  $24$  m<sup>2</sup>, calculate area surface of the parcel DCE.

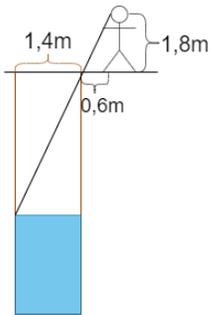


Figure 5

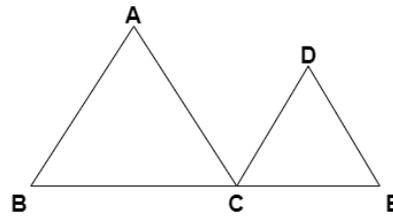


Figure 6