Using congruent triangles	Season Episode Time frame	01 AP10 1 period

Prerequisites : Vocabulary and notions about triangles and angles.

Objectives :

- Use congruent triangles to solve problems.

Materials :

- *Exercises.*

1 – Exercises

Whole period

Working by pairs, students have to solve some exercises and hand out a paper to the teacher at the end of the period.

Using congruent triangles	Season 01 Episode AP10 Document Exercises

Exercise 1

Let ABC be a scalene triangle, with $CBFG$ and $ABDE$ two squares built outside of it

1. Decompose the angles to prove that $\angle CBD = \angle ABF$.
2. Deduce that $\triangle BCD$ and $\triangle ABF$ are congruent.
3. Deduce that $AF = DC$.

Exercise 2

Let d_1 and d_2 be two parallel lines, with A a point on d_1 and B a point on d_2. Let K be the midpoint of the segment AB. Through K, draw a line $(\mathscr{D})$ that intersects d_1 in M and d_2 in N.

1. Prove that the triangles KAM and KBN are congruent.
2. Deduce the position of K on MN.

Exercise 3

Let ABC be a scalene triangle, with I the midpoint of BC. Let B' and C' be the orthogonal projections of B and C onto the median AI of the triangle.

1. Prove that the triangles IBB' and ICC' are congruent.
2. Deduce from the previous question the nature of $BBCC'$.

Exercise 4

Let $ABCD$ be a square with center O and M a point on the side AB. Let P be the intersection of the side AD and the line perpendicular to CM through B.

1. Prove that $\angle DCM = \angle BMC$ and deduce that $\angle BCM = \angle ABP$.
2. Deduce that the triangles MCB and PBA are congruent and that $MB = AP$.
3. Prove that the triangles OMB and OPA are congruent.
4. Deduce that $\triangle POM$ is right-angled and isosceles.