

EQUIVALENT AND EQUISCOMPONIBLE FIGURES

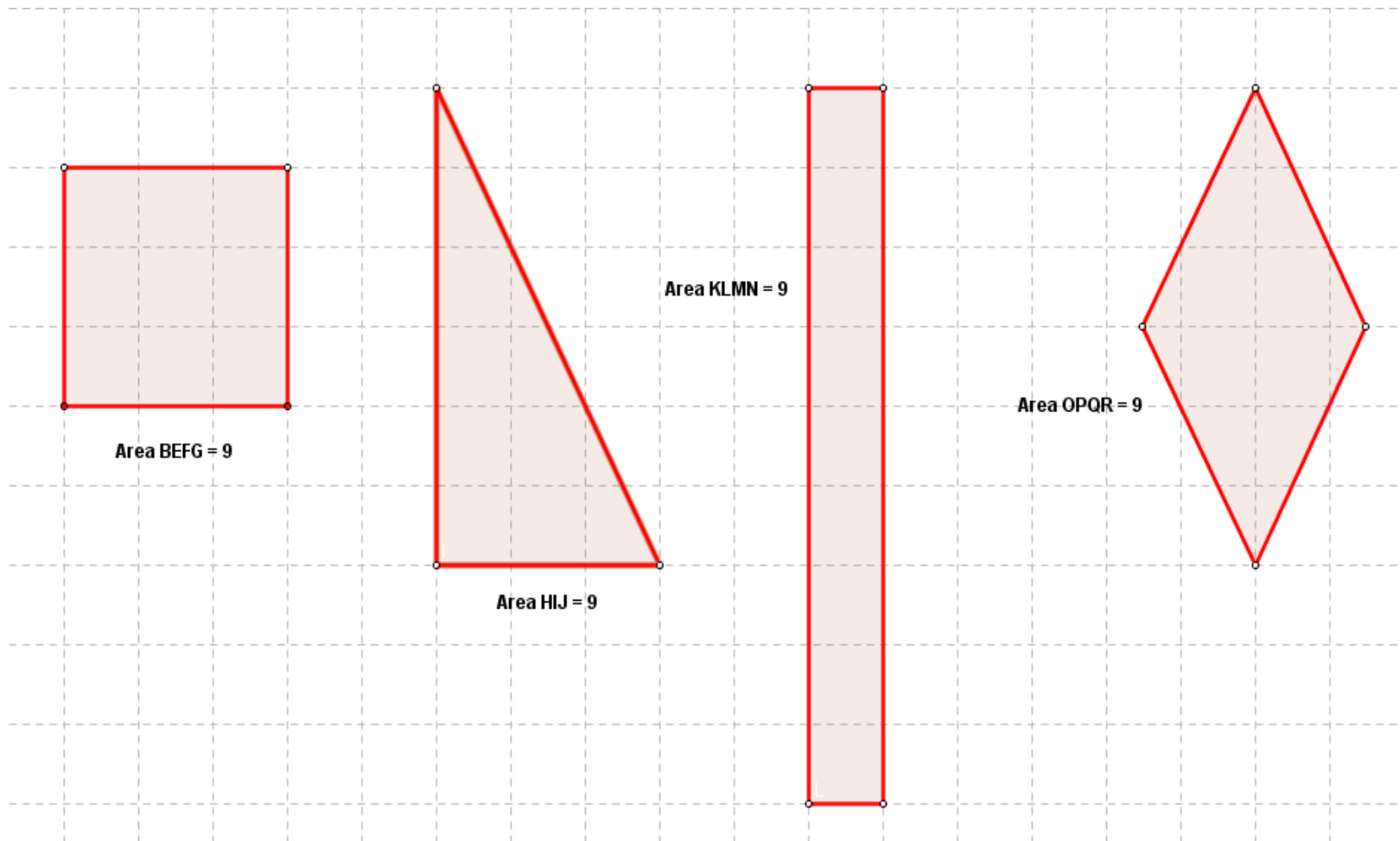
*Liceo Linguistico Europeo "G.Parini" Italy
class II a.s. 2011/12*



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EQUIVALENT FIGURES

Plain figures are equivalent if they have the same area, even if they have different shapes.



REFLEXIVE PROPERTY

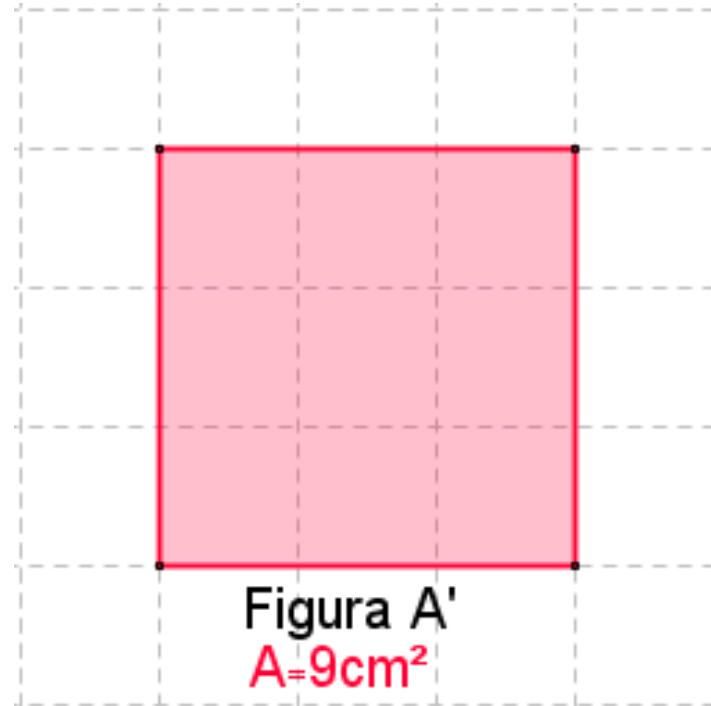
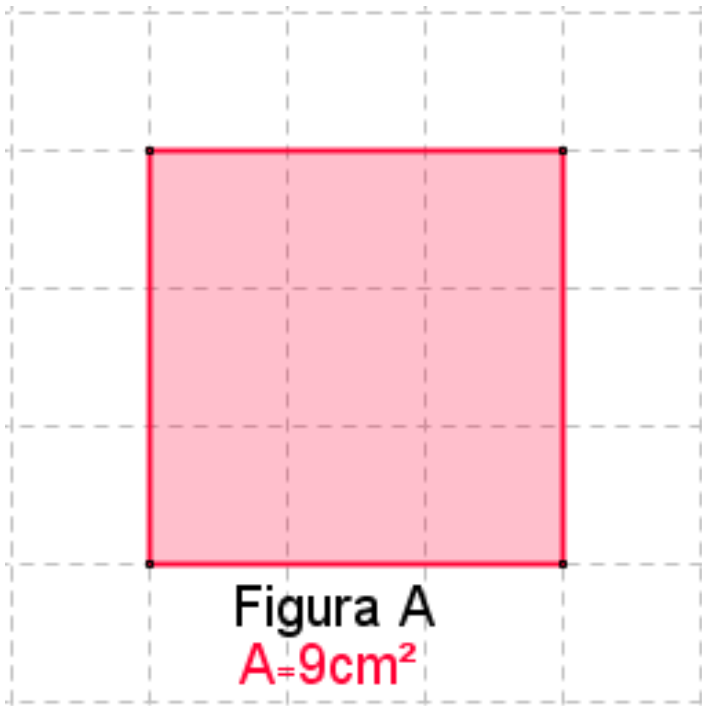


Figure A and figure A' are equivalent.



SIMMETRIC PROPERTY

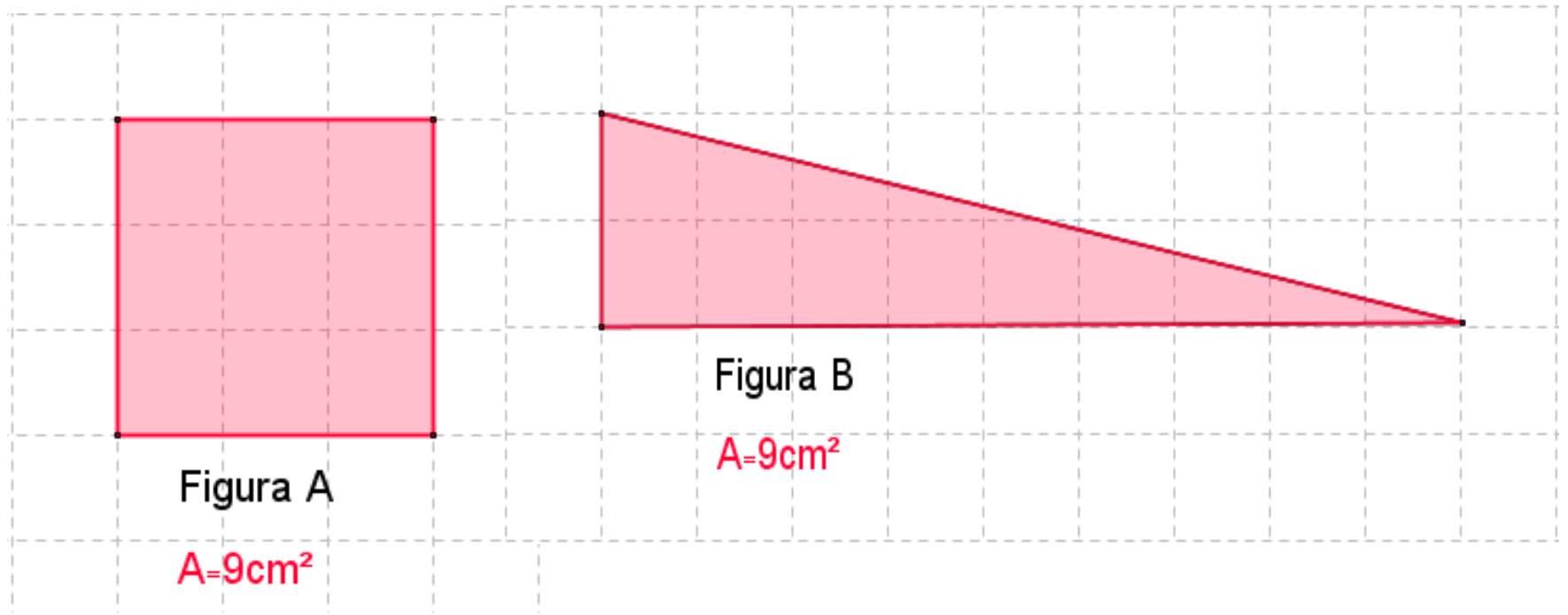


Figure A and figure B are equivalent.
Figure B and figure A are equivalent.

IN THE REALITY...



TRANSITIVE PROPERTY

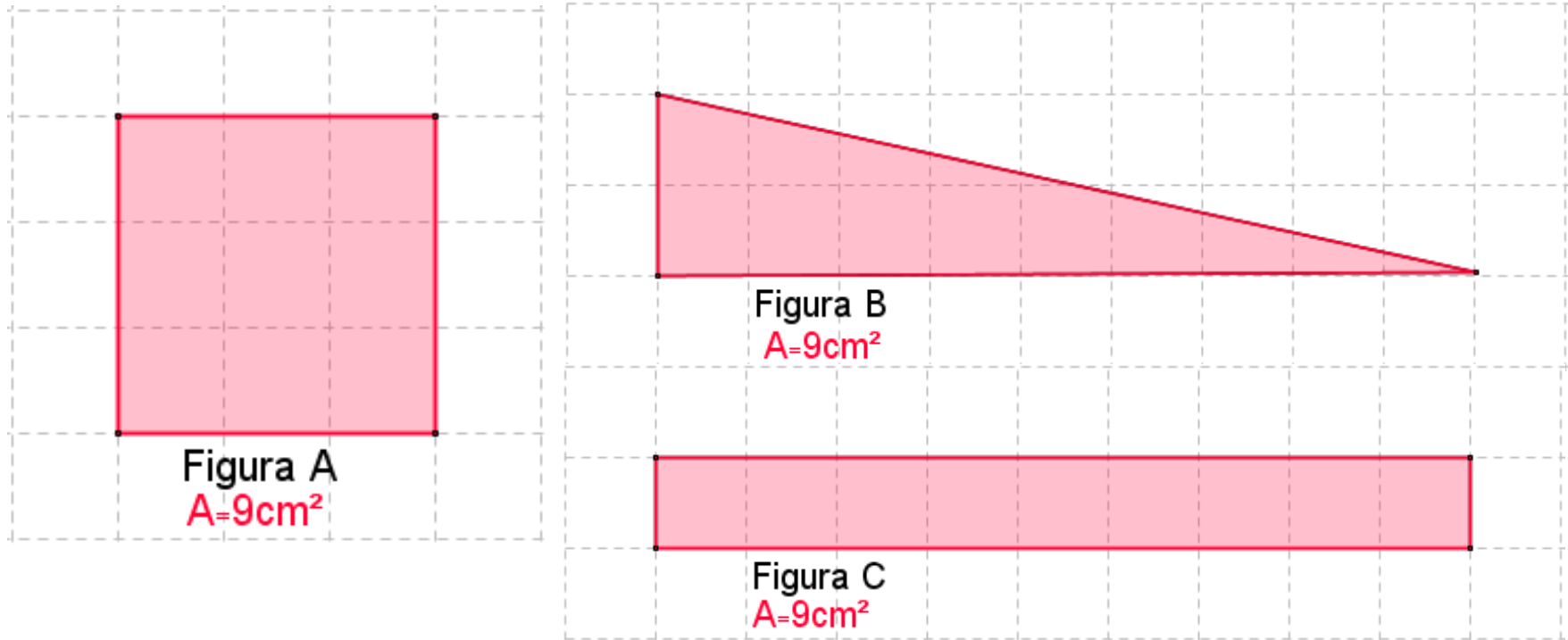


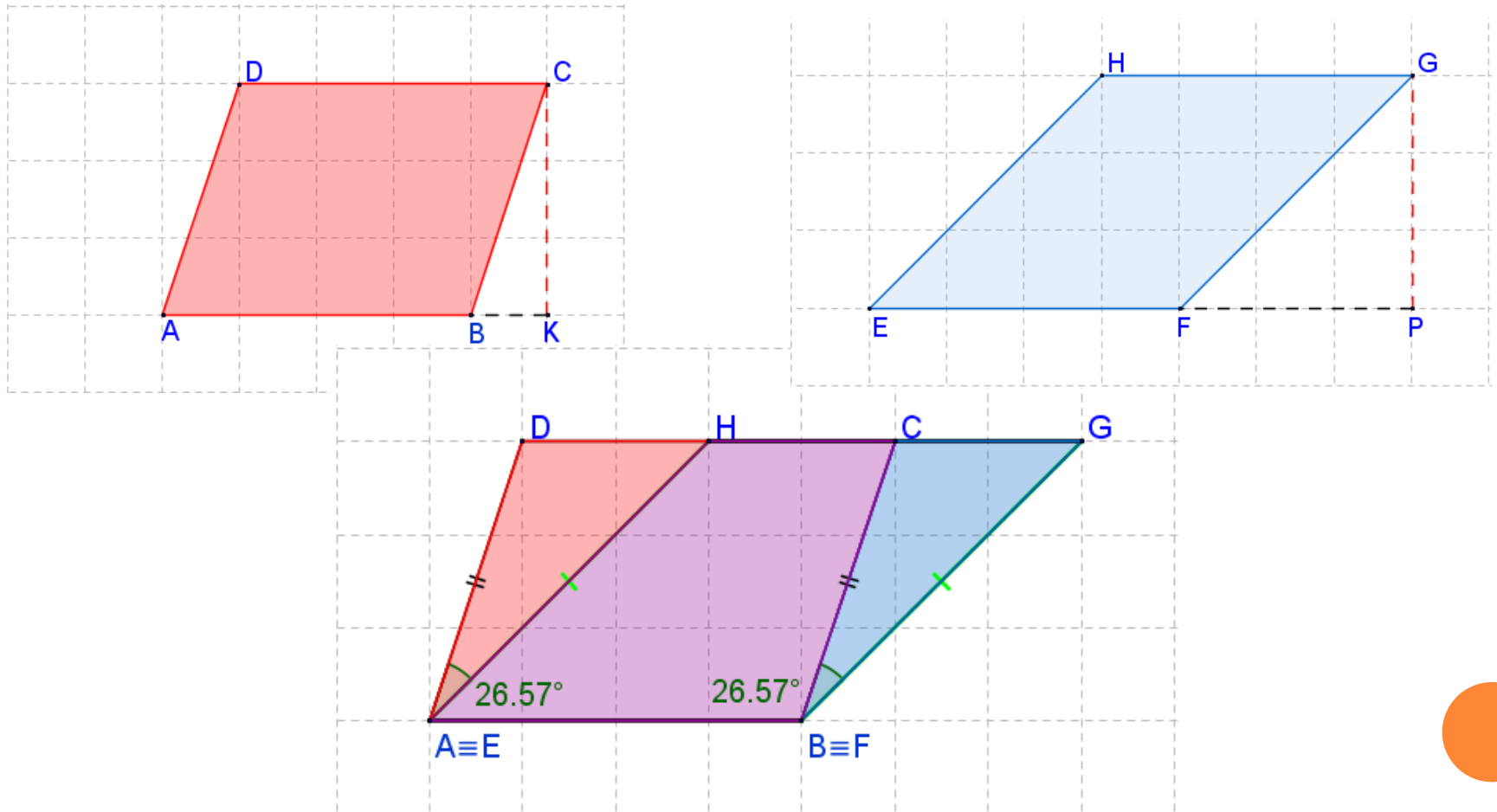
Figure A and figure B are equivalent.
Figure B and figure C are equivalent.
Figure C and figure A are equivalent.



THE EQUIVALENCE BETWEEN TWO PARALLELOGRAMS

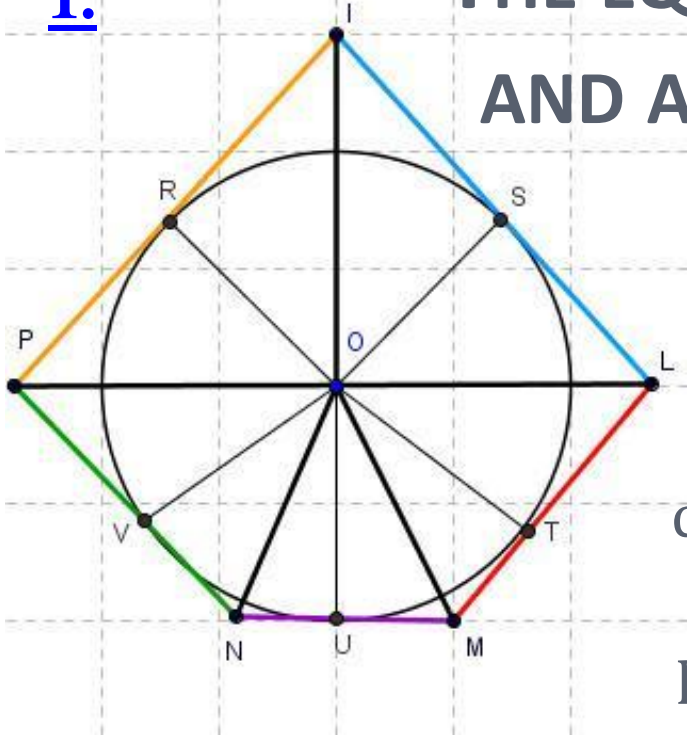
Therom

If two parallelograms have congruent the corrisponding bases and heights, they are equivalent.



1.

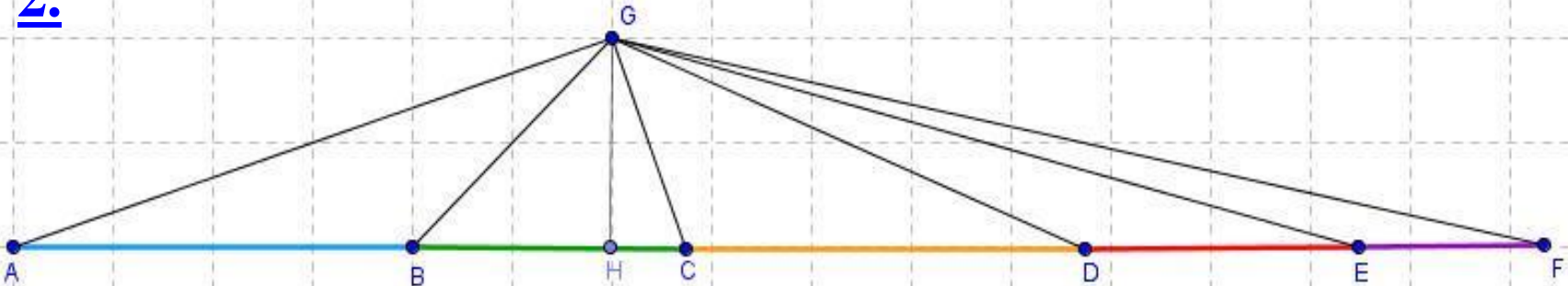
THE EQUIVALENCE BETWEEN A TRIANGLE AND A POLYGON CIRCUMSCRIBED TO A CIRCUMFERENCE



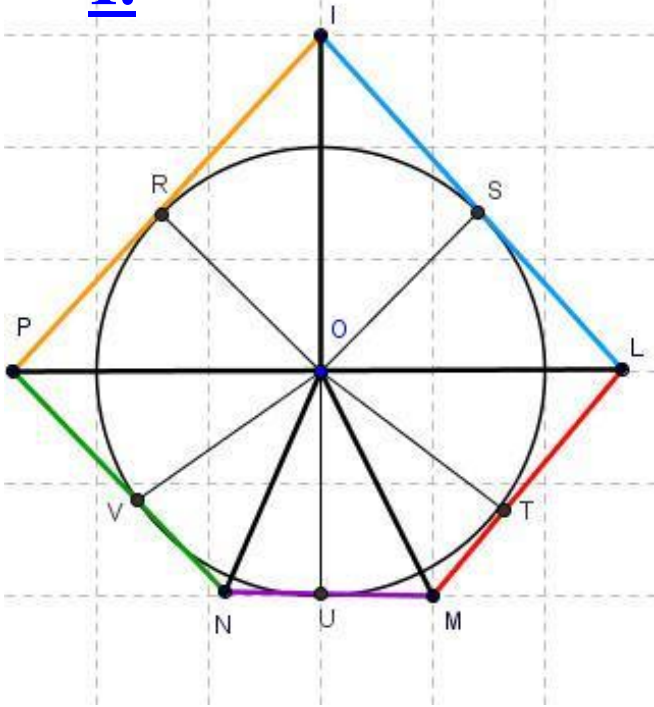
Theorem

A polygon circumscribed to a circumference is equivalent to a triangle which has the base congruent to the perimeter of the polygon and the height congruent to the radius of the circumference.

2.



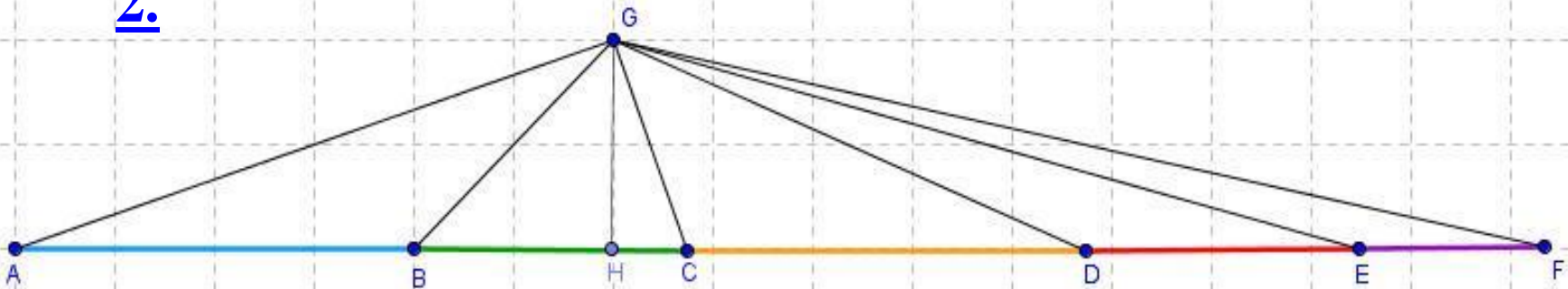
1.



$$r = GH$$
$$2p_1 = AF$$

The polygon
ILMNP and the
triangle AFG are
equivalent.

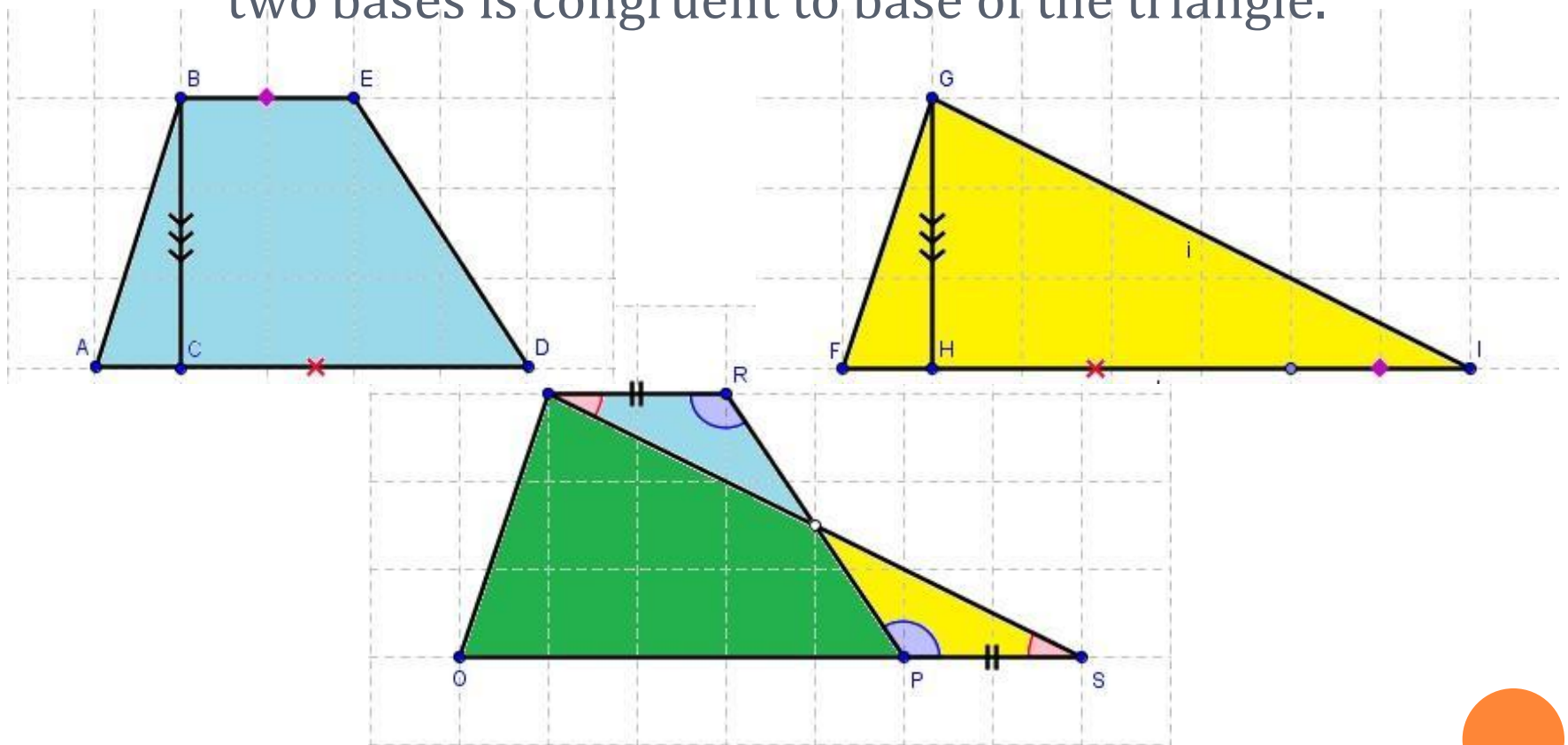
2.



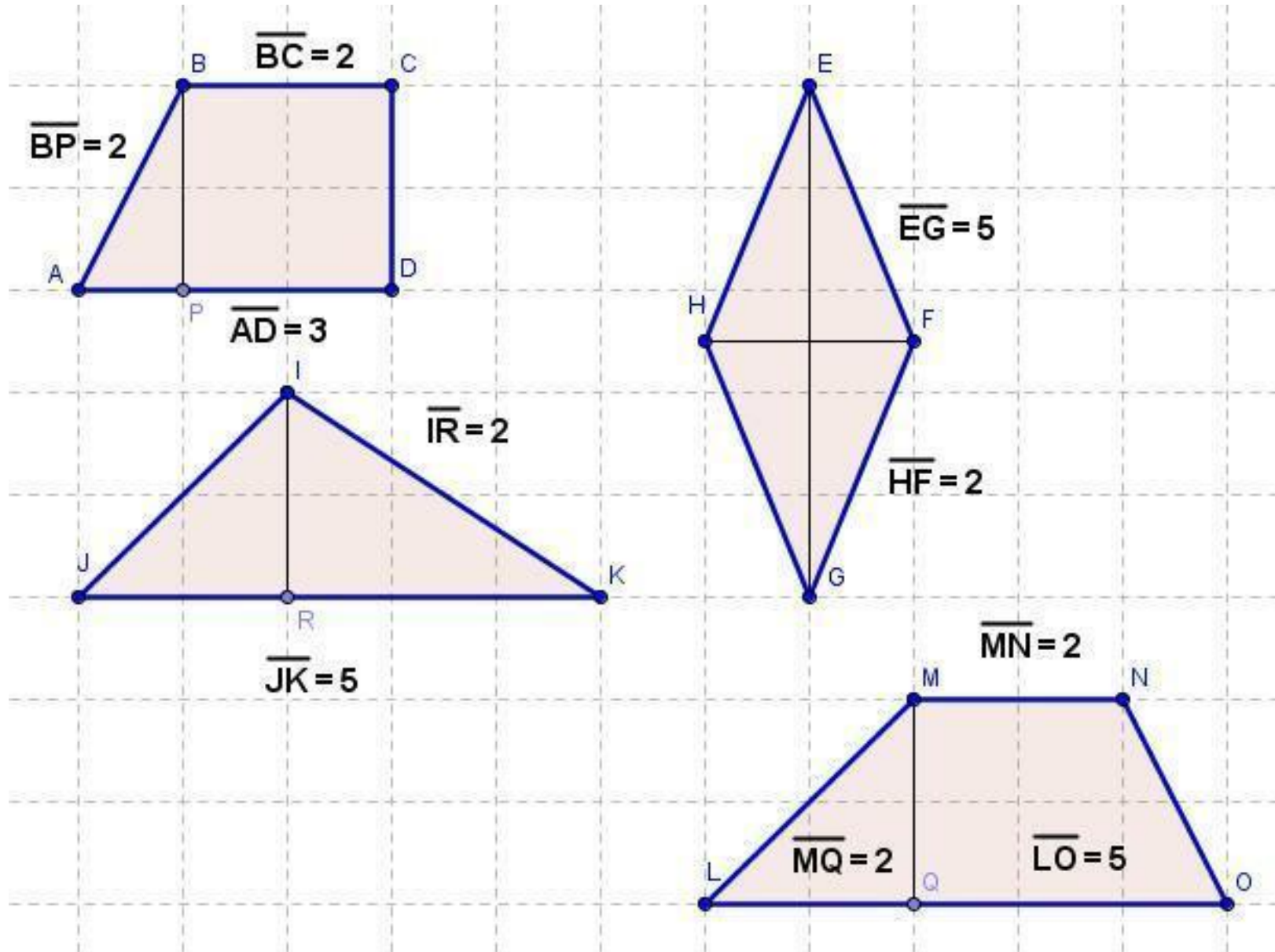
THE EQUIVALENCE BETWEEN A TRIANGLE AND A TRAPEZIUM

Theorem

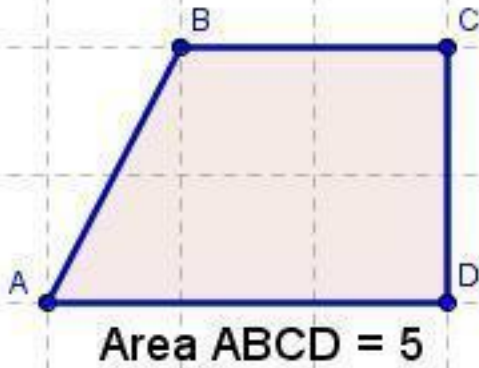
A trapezium is equivalent to a triangle if its height is congruent to the height of the triangle and if the sum of its two bases is congruent to base of the triangle.



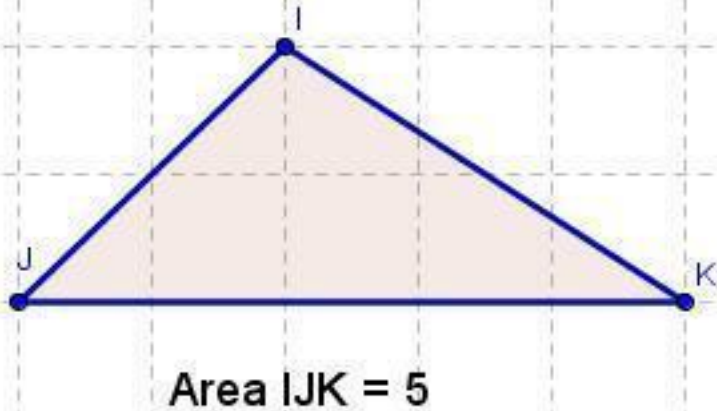
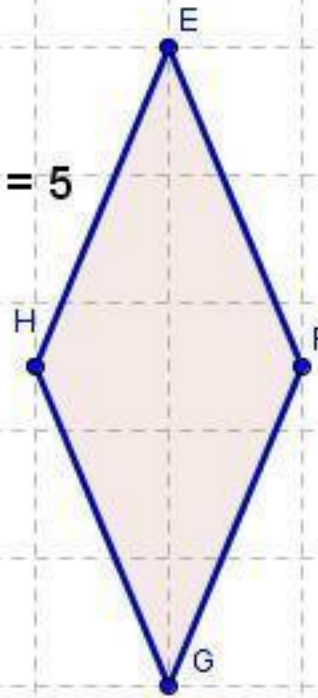
EXERCISES: Are the four figures equivalent?



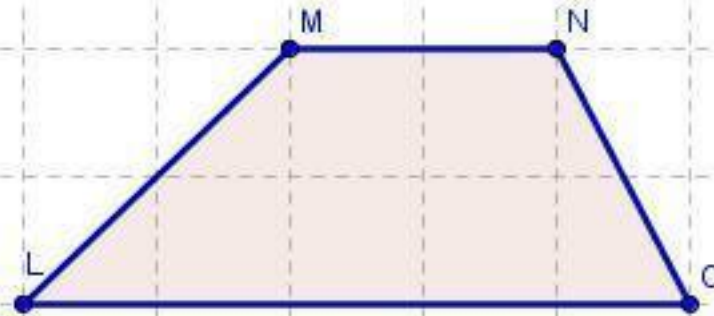
Only figures ABCD, EFGH e IJK are equivalent.



Area EFGH = 5

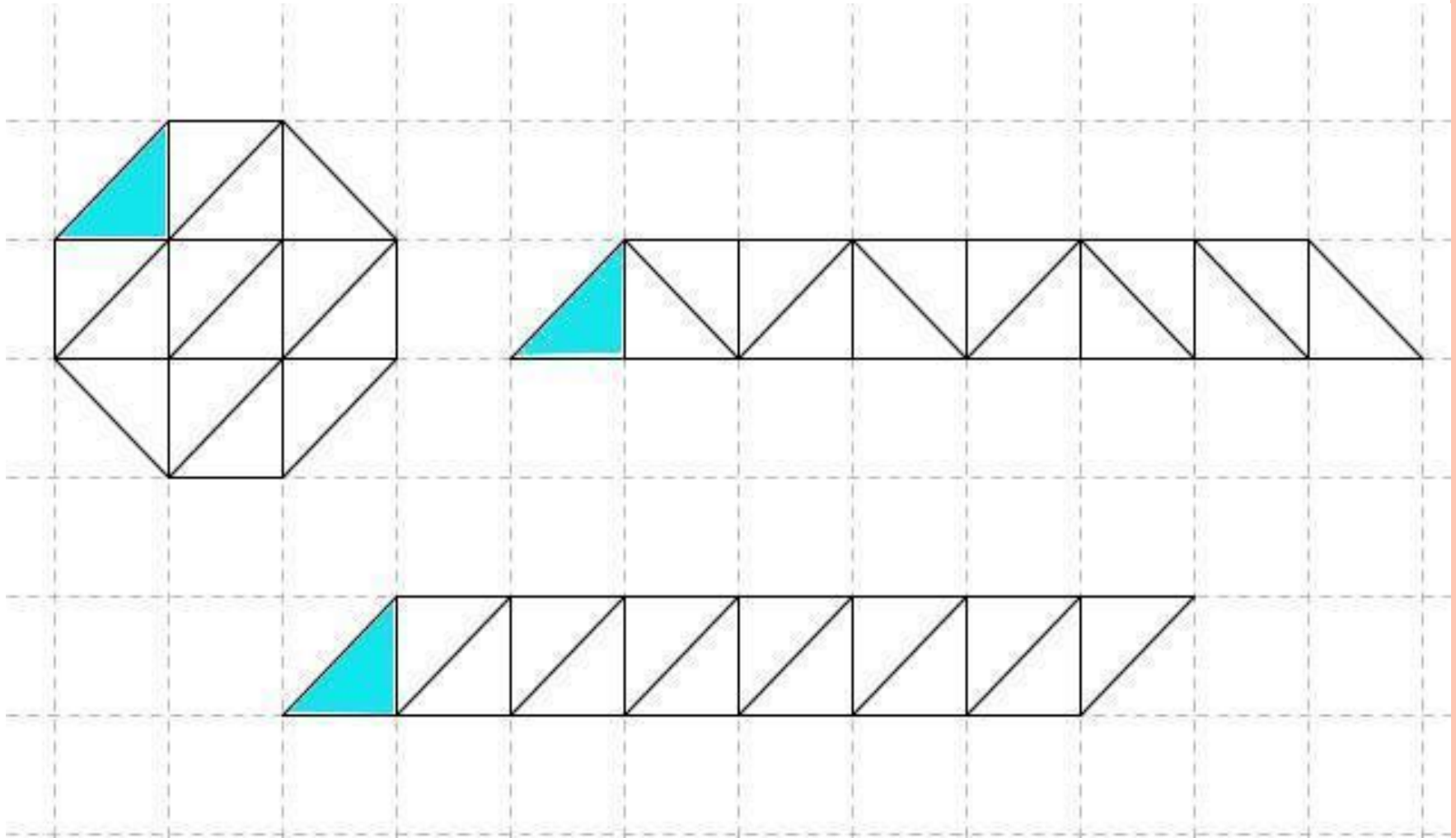


Area LMNO = 7



EQUISCOMPONIBLE FIGURES

Two figures are equiscomponible if we can divide them in sequences of congruent parts.



REFLEXIVE PROPERTY

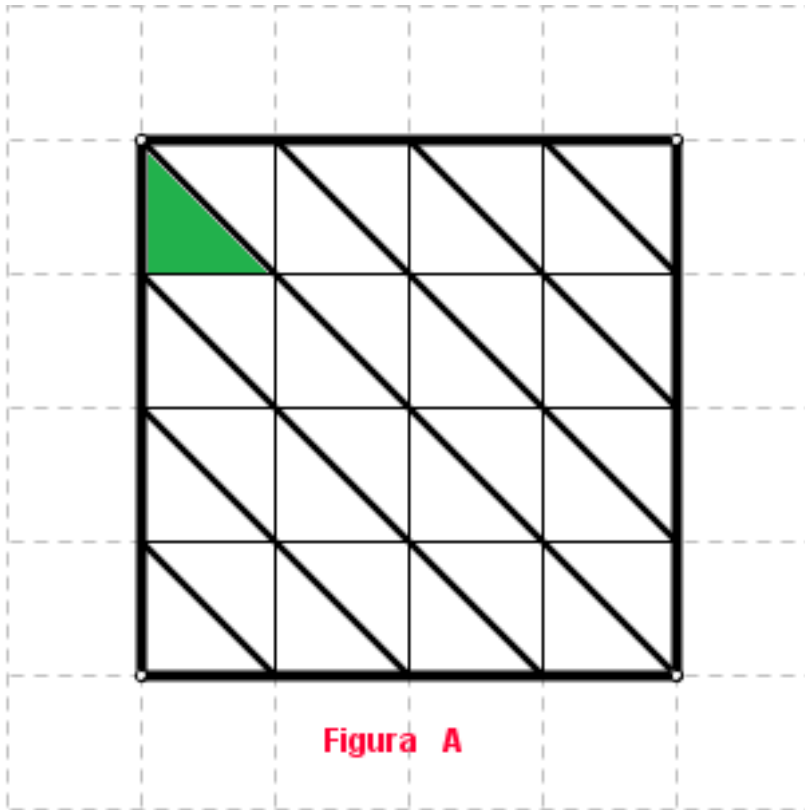


Figura A

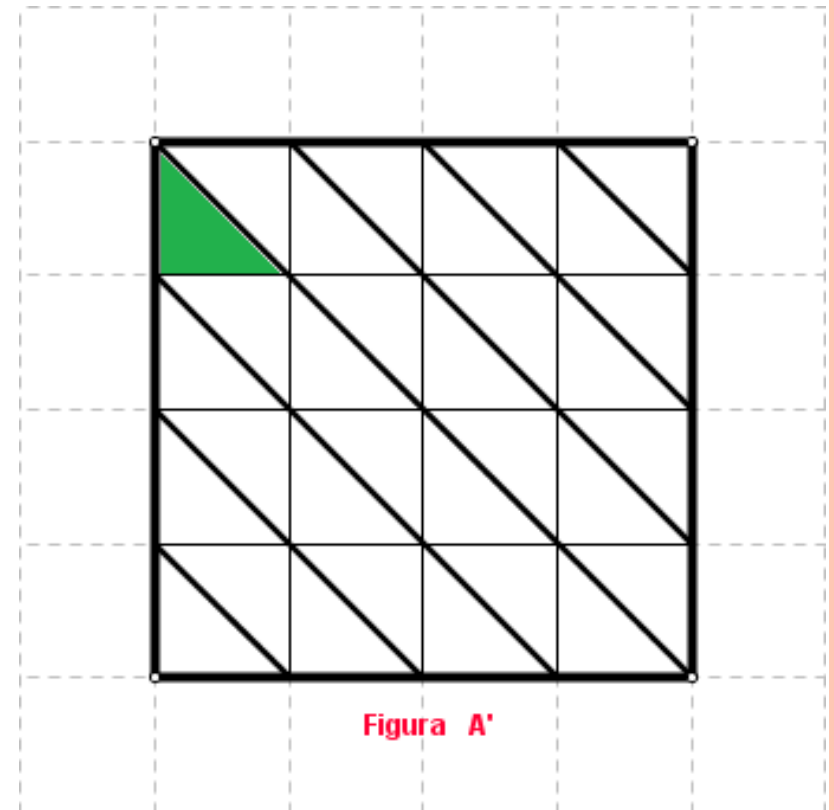


Figura A'

The figures A e A' are equiscomponibile.



TRANSITIVE PROPERTY

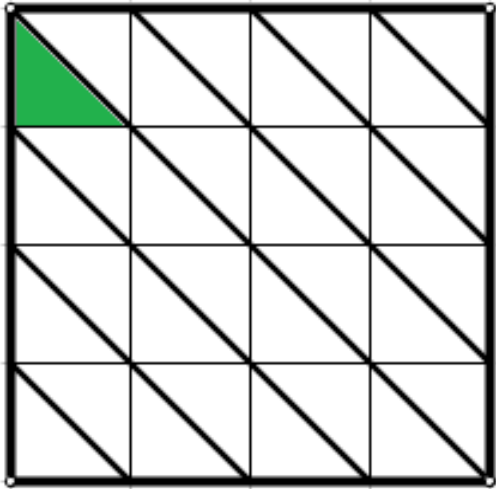


Figura A

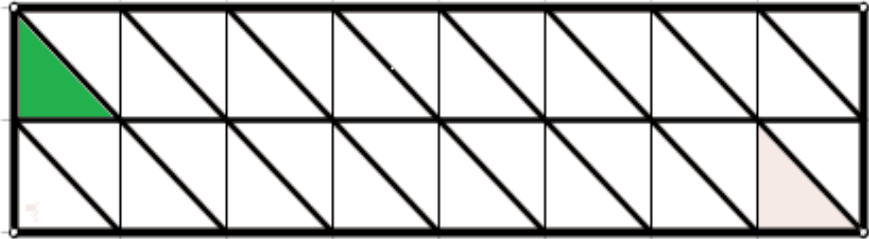


Figura B

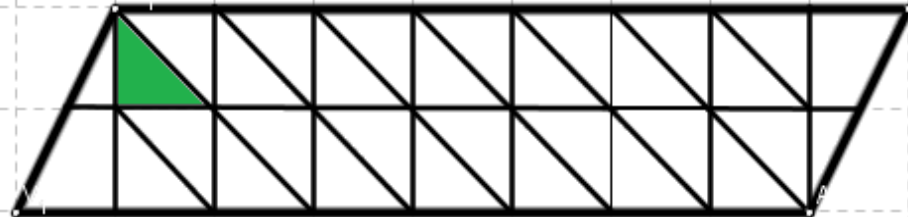


Figura C

The figures A and B are equiscomponibile.
The figures B and C are equiscomponibile.
The figures C and A are equiscomponibile.



SIMMETRIC PROPERTY

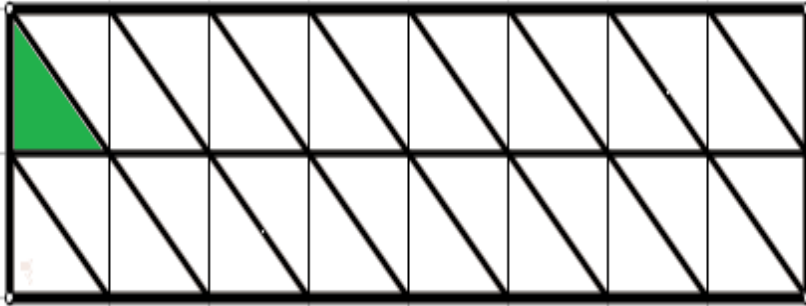


Figura B Area = 16cm^2

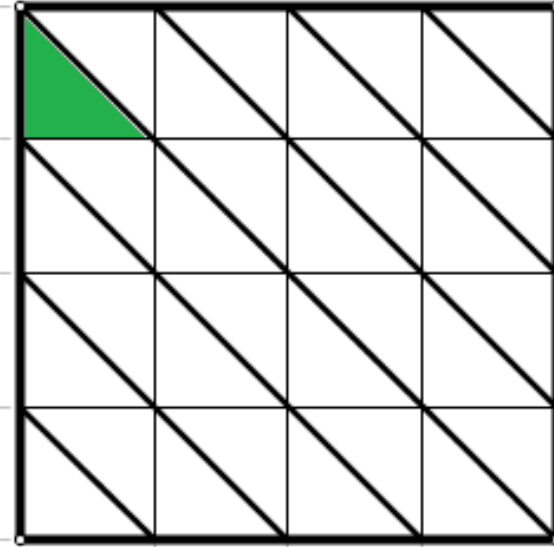


Figura A Area ABCD = 16cm^2

The figures A and B are equiscomponibile.
The figures B and A are equiscomponibile.





An example of the use of the equiscomponibility in our life is the search of the right flooring for our houses.





The most common floorings are those made by equivalent squares. But the square isn't the only geometrical figure we can use to fill plain areas.





The same area which is filled by squares could be filled by triangles, trapeziums...

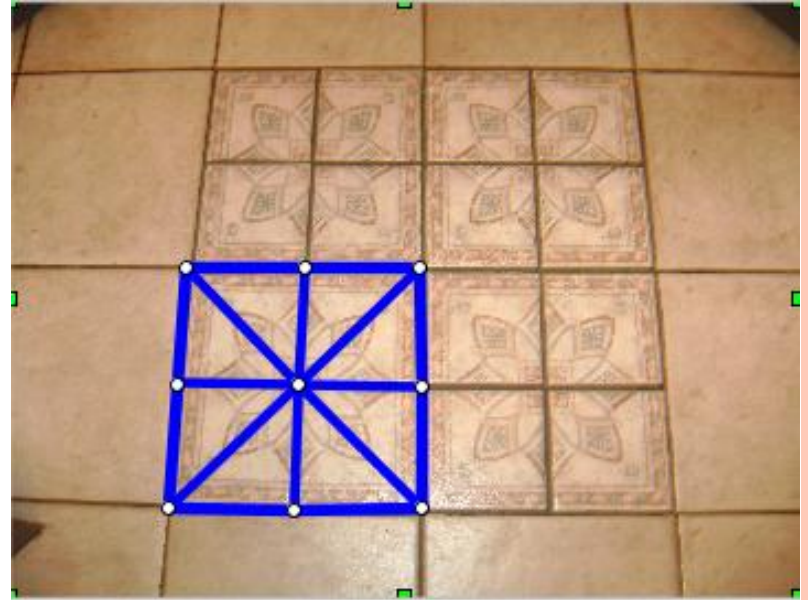


IN THE REALITY...



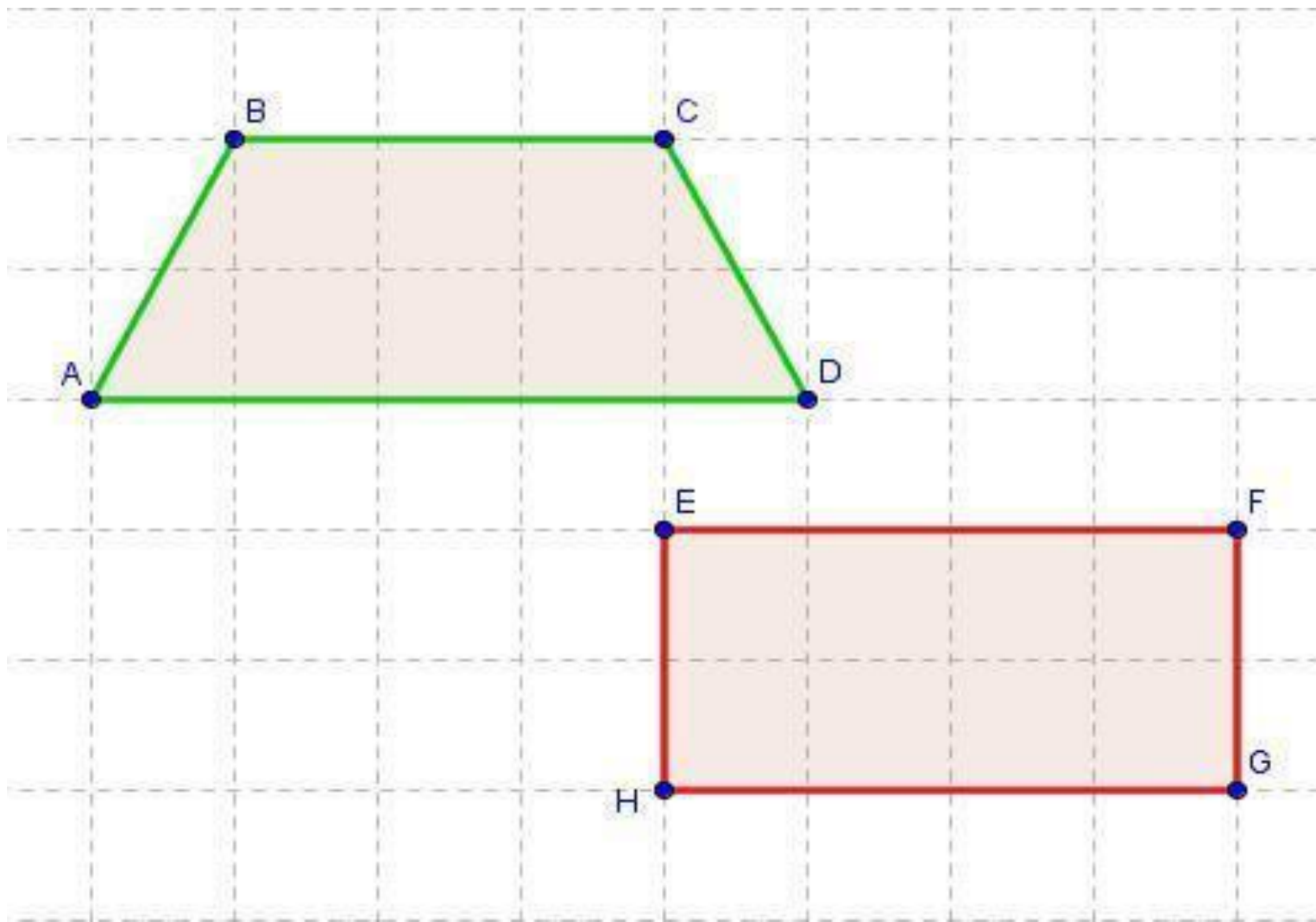
Flooring with parallelograms

Flooring with squares and triangles



EXERCISES

Are the two figures equicomponible? Why?
If the answer is yes, how could they be divided?



SITOLOGIA:

www.lanostra-matematica.org

www.cardnet.marche.it

www.sapere.it

www.wikipedia.it

BIBLIOGRAFIA:

Matematica Blu-Algebra, Geometria, Probabilità



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