



## Geometrical shapes

### SEQUENCE 1

Age group	6-9 y.o.
Prior knowledge	None
Material needed	Geometrical figures box,
Subjects	Geometrical figures – introduction to polygons
Skills involved	<ul style="list-style-type: none"><li>- Use the vocabulary associated with polygons: polygon, triangle, vertex, etc.</li><li>- Identify polygons</li></ul>
Time to carry out the sequence	1 hour

#### Step 1: Discovering the content of the box

Let the pupils discover the box's contents before starting the sequence and construction.

Pupils will discover a story about the Tangram.

#### Step 2: Creation of the boxes

Creation of the box using storytelling resources to make it more engaging.

#### Step 3: Discovering polygons

Once the pupils have familiarised themselves with the material, they can be asked to name polygons. Start with simple polygons such as squares, rectangles and triangles. The aim is also for the pupils to name the shapes they are creating so that they can express the different characteristics of the polygons they represent.



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This helps them discover polygons and the vocabulary around them.

**Polygon:** a closed plane figure bounded by straight lines, with several sides that have sides and vertices.

## Step 4: Categories of polygons

After discovering polygons, we can try to name the different polygons created by the pupils and thus discover the types of polygons and what makes them different.

- 3-sided: triangle
- 4-sided: quadrilateral
- 5-sided: pentagon
- 6-sided: hexagon
- 7-sided: heptagon
- 8-sided octagon
- 9-sided: enneagon
- Ten sides: Decagon

## Stage 5: Extension

Other lessons can follow this one to discover the classification of quadrilaterals, the different types of triangles or even lessons on angles.



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## SEQUENCE 2

Age group	9-12
Prior knowledge	Polygons
Material needed	Geometrical figures box,
Subjects	Geometrical figures - Areas and perimeters
Skills involved	- Use the vocabulary associated with polygons: polygon, triangle, vertex, etc. - Identify polygons
Time to carry out the sequence	1 hour

### Step 1: Reminder about polygons - Discovering the content of the box

Let the pupils discover the box's contents before starting the sequence and construction. Ask them what they think we will make and what they can do with the material.

### Step 2: Creation of the boxes

Creation of the box using storytelling resources to make it more engaging.

### Step 3: Free use and reminder

If the pupils have never used this tool, it is important to let them explore freely. They can build geometric shapes and name the different shapes they use; this is an opportunity to get them to express what they are doing!

It is also possible to recall the different names of polygons and classify quadrilaterals and triangles.



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## Step 4: Discovering the perimeter with a geoboard

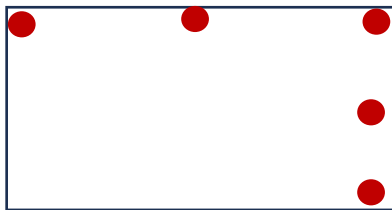
Start by creating simple polygons in a geoplan. You can use an existing geoplan or create your own.

Ask the students how to find the length of the outline of the shape they have created (start with a simple polygon) and introduce the word perimeter.

The pupils will naturally suggest counting the number of spaces between the spikes that make up one side of the figure.

Try to find a formula that can work with every polygon.

Repeat the same process with a rectangle:



In the case shown here, the shape's perimeter would be  $3 + 2 + 3 + 2 = 10$  units.

Repeat the operation by making different rectangles, then try to create a generic formula that can work for all the rectangles.  $\rightarrow L + w + L + w = \text{rectangle's perimeters}$  (with L standing for length and w standing for width)

Point out to the students that the formula can be simplified by recalling the properties of a rectangle (2 identical widths and two identical lengths).  $\rightarrow (L + w) \times 2 = \text{rectangle's perimeters}$

Repeat the same process to calculate the perimeter of a square.



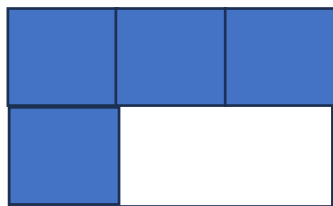
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## Step 5: Discovering the area of a figure

Ask the students how we could find out the area covered by the figure (start with a rectangle).

You can suggest counting the number of squares that fit into the figure. In the example here, we can see that the area of the rectangle is six units.

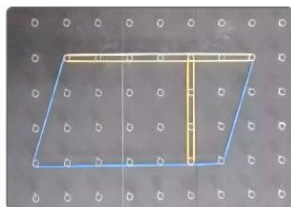


Repeat the operation with different rectangles and then get the children to think of a formula that can work for all rectangles.  $\rightarrow L \times w = \text{area of rectangle}$ .

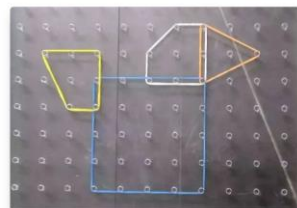
Repeat the same process with a square.

## Step 6: Extension

You can use the same procedure to find out the areas of other shapes. Here is an example of how to work out the formula for the area of a parallelogram.



The exact process can be used to determine the area of more complex shapes.



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## References:

Ludi Matik. (2019). Le Géoplan, un super plan pour aborder la géométrie !

<https://www.ludi-matik.com/le-geoplan-un-super-plan-pour-aborder-la-geometrie/>



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