



MATH&MOVE

LESSON

USING MOVEMENT TO

build polyhedra and
polygons



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This lesson focuses on building polyhedra-like solids using materials and your own body.

At the end of this lesson, pupils should be able to:



- Define what a polygon and a polyhedron are.
- Know the specific vocabulary related to geometric shapes.
- Recognise and reproduce the most common polyhedra.
- Name and identify the characteristics of geometric figures (face, vertex, edge, etc.).

TOPIC: Geometry (figures and solids)

DURATION: 10 - 30 mins

LEVEL: Ages 8-9

PARTICIPANTS: Small groups

LESSON PREPARATION

Required skills

For this lesson, pupils should already:

- Move their bodies to replicate certain images, landmarks or representations.
- The main figures of polygons and polyhedra.
- The basic vocabulary of geometric figures.
- The difference between 2D and 3D shapes.

Required materials and set up

These are the materials that you will lay out for the different groups to work on so that they can create shapes collaboratively.

- 1** A roll of thick string
- 2** Pen / scissors / ruler / square, for the creation of each face of the solids (cube, tetrahedra and cuboid)
- 3** Large cardboard boxes to cut out:
 - 6 squares of the same size for the cube.
 - 4 equilateral triangles for the tetrahedra.
 - 3 pairs of rectangles of different sizes for the cuboid.

LESSON INSTRUCTIONS

Introduce the activity to the pupils:

In groups of 6, each group chooses a polygon: the square, the triangle or the rectangle.

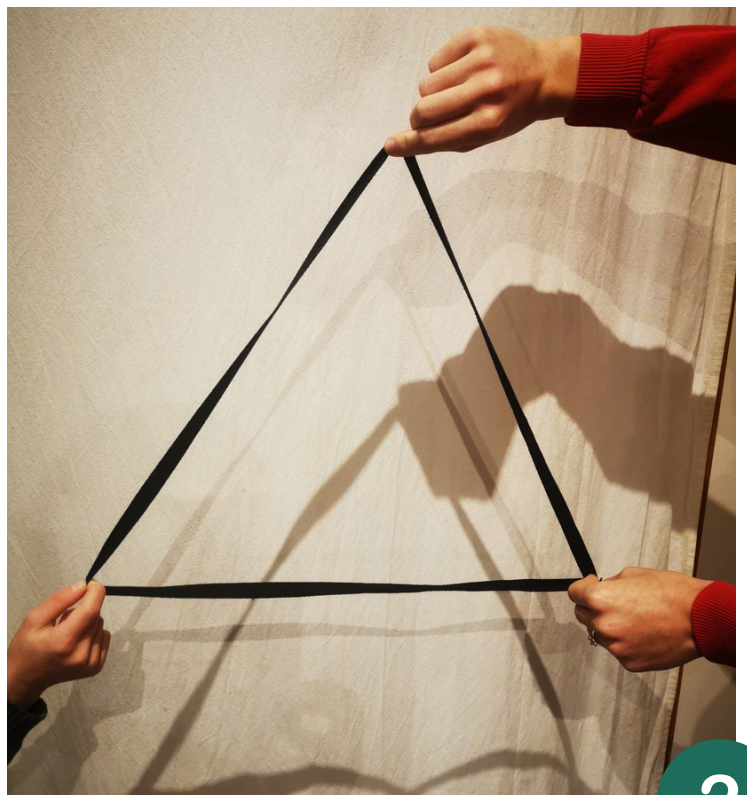
1

CREATING THE EDGES OF THE POLIGON

1. With a string:
 - “Using the string, you will work together to construct the geometric figure you have chosen: a square, a triangle or a rectangle.”
2. With your bodies:
 - “You will then form the same geometric figure laying down on the ground using just your bodies.”

CREATING THE FACES OF THE SOLIDS

3. With cardboard:
 - “We will now review the characteristics of the following polyhedra:
 - the cube is made up of 6 square faces,
 - the tetrahedra is made up of 4 triangular faces,
 - the cuboid is made up of 6 rectangular faces.”
 - “You will then look in the pile of cardboard shapes for the geometric shapes you need to build the solid corresponding to the geometric figure you have chosen.”
 - “Finally, you will build the solid: cube, tetrahedra or cuboid.”



2



Lesson

- In groups, pupils take turns to manipulate the string and their bodies to model the proposed geometric figures: square, triangle and rectangle.

- At this step, pupils first review with the teacher the characteristics of the following polyhedra: cube, tetrahedra and cuboid.
- Then in groups, pupils choose the cardboard shapes corresponding to the geometric figures they have chosen and create the polyhedra in volume.
- Finally, pupils change geometric shapes and repeat the steps.



CONCLUSION



Evaluate the progress of the activity and adjust the groups if necessary for the next time or the following rounds. Discuss how the 2D and 3D representations of the shapes are similar and different.

Estimate the competences points acquired and not acquired for each pupil to have a working basis for the next time or on another geometry activity.

TO GO FURTHER



You can adapt the activity constructing the solids on a smaller scale by pupils working individually from a model or leave their imagination free to create one without any references.

Also adapt the material according to the number of pupils in the class to form the groups in order to all the children can participate or divide the class into 2 activities and then swap.

You could include other more complex polygons and by precisely defining the characteristics (number of edges, etc.).

It is also possible to have them identify the axes of symmetry.

RECOMMENDATIONS FOR INCLUSION

How to adapt this lesson to younger pupils

This activity can be adapted to pupils aged 6-7 by performing only step 1 and 2 (string and body) and by having them use the specific vocabulary of the figures used. This means that the pupils can focus only on the identification and construction of 2D shapes.

Accommodations for pupils with specific learning disorders

When working on geometry lessons with pupils, it's important to incorporate visualisation techniques so that they can better understand the characteristics of the shape(s). Therefore, during the activity, have 2D and 3D geometric models that pupils can refer to as they're working on creating their own replications.

As pupils with motor skill deficiencies can struggle with certain fine motor skills tasks, such as cutting with scissors, make sure that all material (strings, papers, cardboard) is either cut out for children ahead of time or provide them with Easi Grip scissors (<https://www.thetherapystore.com.au/product/mini-easi-grip-scissors/>) to assist them.

BIBLIOGRAPHY

The Therapy Store. "Mini Easi-Grip Scissors -PETA," n.d.
<https://www.thetherapystore.com.au/product/mini-easi-grip-scissors/>.