

## Lesson plan

### « The shapes building »

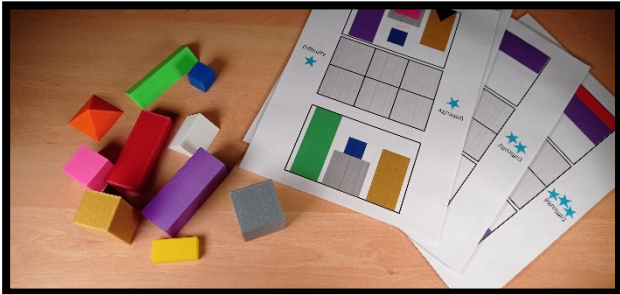
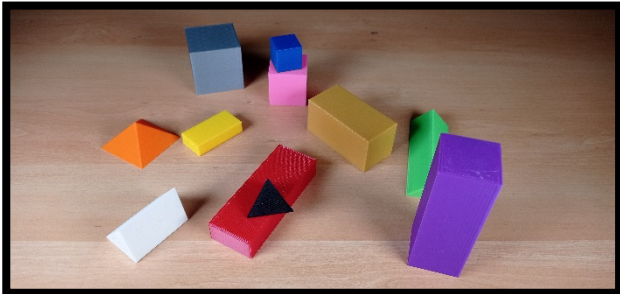

<b>Short description of the activity</b>	<ul style="list-style-type: none"><li>- Organising shapes in space</li><li>- Situate objects in relation to each other in space.</li><li>- Solving a problem using geometric shapes</li><li>- Viewing objects from different angles.</li></ul>
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<b>Level of difficulty</b>	Level 2
<b>Duration of the activity</b>	15 minutes
<b>Number of participants</b>	Individual or in pairs
<b>Inventory of the hands-on exhibit</b>	<ul style="list-style-type: none"><li>- 5 challenge sheets, each with a different level of difficulty</li><li>- 11 solids « polyhedra » (3D printed)</li></ul>

<b>Skills required of children</b>	<ul style="list-style-type: none"><li>- Recognise the usual solids and name them.</li><li>- Spatial vocabulary (right / left; front / back; foreground / background; above / below).</li></ul>
<b>Skills worked on</b>	<ul style="list-style-type: none"><li>- Know how to situate objects in relation to each other.</li><li>- Identify simple figures in an assembly.</li><li>- Move from a horizontal 2D plane to a vertical 3D plane.</li><li>- Cooperation between peers (for assembly and validation)</li></ul>

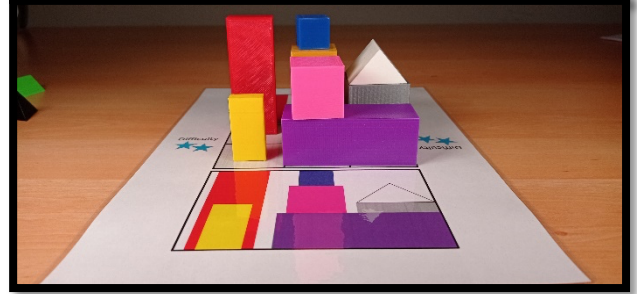
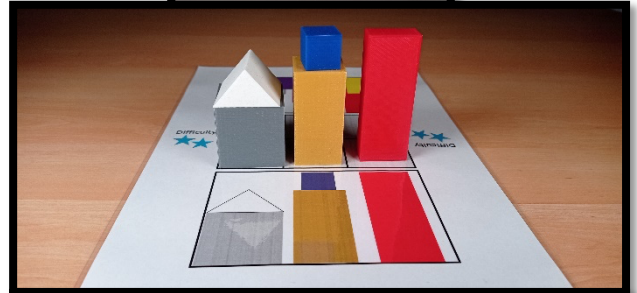
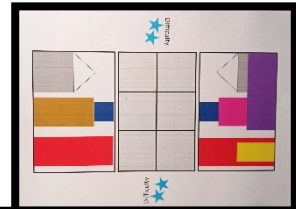
## Instruction and description of the activity, step by step

<p><b>Instruction</b></p>	<ul style="list-style-type: none"> <li>- Look at the plane shapes shown on the challenge sheet.</li> <li>- Place the solids (polyhedra) on the grid to reproduce the design.</li> </ul>
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Step by step	Description	Illustration
<p><b>Step 1</b></p>	<p><u>Making the material</u></p> <ul style="list-style-type: none"> <li>⌚ Duration: about 10 hours for the 11 polyhedras to be 3D printed</li> </ul> <p><u>Material preparation :</u></p> <ul style="list-style-type: none"> <li>- Position the challenge sheets by level of difficulty (* / ** / ***)</li> <li>- Provide the 11 3D printed polyhedra</li> </ul>	
<p><b>Step 2</b></p>	<ul style="list-style-type: none"> <li>- Allow children to experiment and play with the solids.</li> </ul>	
<p><b>Step 3</b></p>	<p><u>Conduct the activity:</u></p> <ul style="list-style-type: none"> <li>- Present the challenge sheets.</li> <li>- Show the activity to the children and explain it.</li> <li>- Do the first challenge sheet together.</li> <li>- Explain the role of each player in completing the challenge sheets in pairs.</li> </ul>	

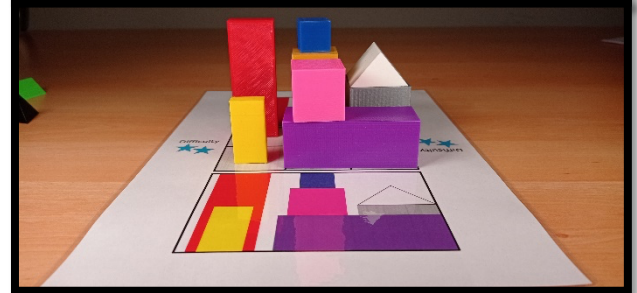
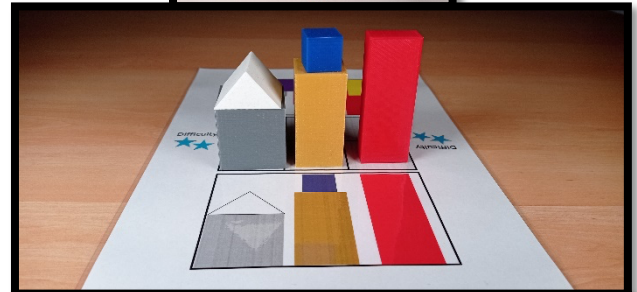
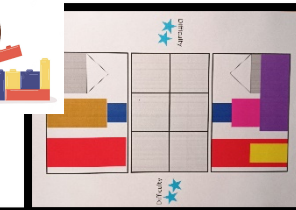
### Step 4

- The children play independently.



### Step 5

- The children play in pairs.



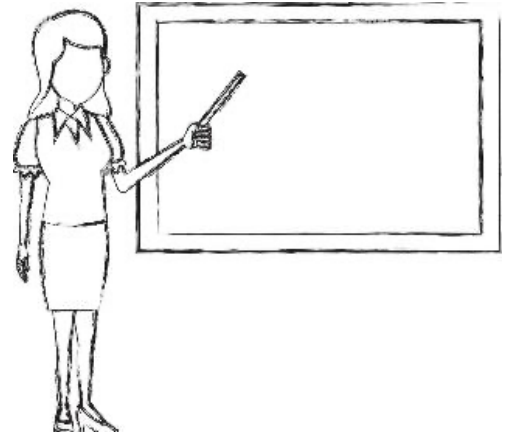
### Step 6

- Ensure that the game runs smoothly
- Encourage students to verbalise their actions.



### Solution

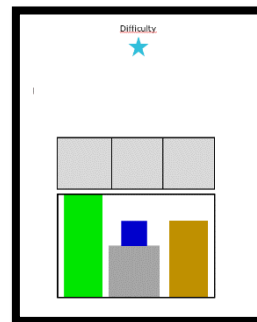
- Verification by the teacher or classmate from 2D to 3D assembly.



## To go further

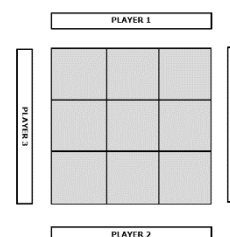
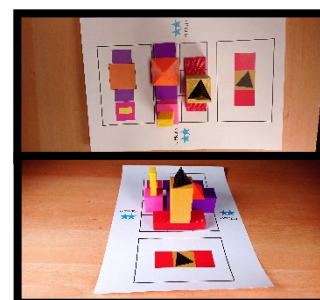
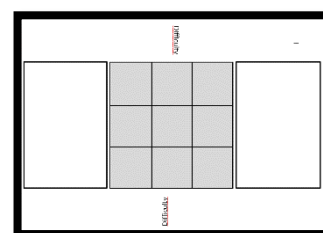
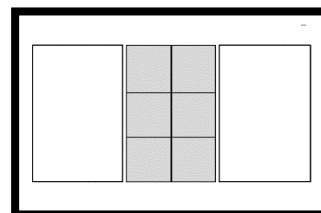
### **For level 1 (4-5 years):**

- same activity but with one view only



### **For level 2 (6-7 years):**

- Blank challenge sheet for children to create their own.
- Add another plane to the challenge sheets (1st plane / 2nd plane / 3rd plane).
- Make a challenge sheet with the top view.
- Add 2 more players with side views.



## Resources

Jeux Mathématiques de l'IRES

<http://www.ac-grenoble.fr/ecoles/bv/spip.php?article543>