

## Lesson Plan

# Funky Chart

<b>Short description of the activity</b>	Learning multiplication through repeated addition. Conceptual understanding of multiplication rather than just memorising the results.
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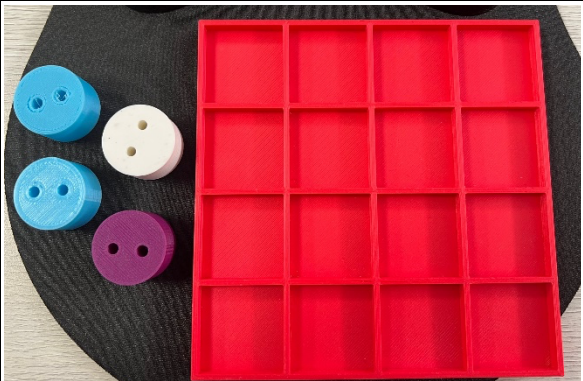
<b>Level of difficulty</b>	Level 2
<b>Duration of the activity</b>	15 minutes
<b>Number of participants</b>	Individual
<b>Inventory of the hands-on exhibit</b>	<ul style="list-style-type: none"> <li>- 3D Printed Compartment Box - Array</li> <li>- Buttons or Pom poms (can also be 3D printed)</li> <li>- 1 laminated workshop sheet with multiplications on it</li> </ul>

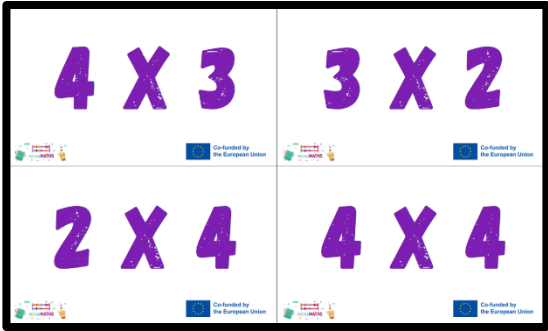
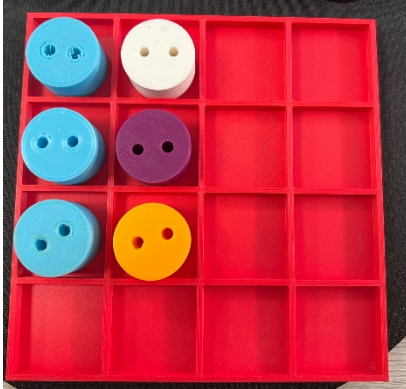
<b>Skills required of children</b>	<ul style="list-style-type: none"> <li>- The child knows how to catch objects (the buttons or pom poms)</li> <li>- The child is able to count</li> <li>- The child is familiar with the concept of horizontal and vertical</li> </ul>
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<b>Skills worked on</b>	<ul style="list-style-type: none"> <li>- The child identifies the meaning of multiplication and learns how to link the results with addition and visual representations.</li> </ul>
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### Instruction and description of the activity, step by step

<b>Instruction</b>	Choose a multiplication card and fill in the array to find the result.
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Step by step	Description	Illustration
<b>Step 1</b>	<p><u>-Making the material:</u></p> <ul style="list-style-type: none"> <li>➤ Duration: variable according to the 3D printer.</li> <li>- 5 hours approximately to print the compartment box</li> <li>- 1.5 to print the 3D buttons/pom poms</li> </ul> <p><u>-Material preparation:</u></p> <p>Approximately 1 hour to print, cut, and laminate the workshop sheets.</p> <p>List what is available to the children on the table.</p>	

<b>Step 2</b>	<p><u>Conduct the activity:</u></p> <ul style="list-style-type: none"> <li>- Ask students to grab a card (ex: 3x2) and fill in the array with buttons or pom pom balls to make it.</li> </ul>	
<b>Step 3</b>	<ul style="list-style-type: none"> <li>- Next, discuss with students the difference in rows and columns and how to fill in the array.</li> </ul>	
<b>Step 4</b>	<ul style="list-style-type: none"> <li>- The child fills in the array</li> </ul>	
<b>Solution</b>	<ul style="list-style-type: none"> <li>- Check with children that the array has been filled correctly and discuss how the concept of repeated addition is linked to multiplication</li> </ul>	

<b>To go further</b>	<ul style="list-style-type: none"> <li>- If you want pupils to work with larger numbers, you could 3D-print a bigger compartment box, for multiplications such as <math>5 \times 5</math>, <math>7 \times 6</math> etc.</li> </ul>	
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<b>Resources</b>	<a href="https://kateshomeschoolmath.com/multiplication-array/">https://kateshomeschoolmath.com/multiplication-array/</a> <a href="https://www.mathkidsandchaos.com/what-are-multiplication-arrays/">https://www.mathkidsandchaos.com/what-are-multiplication-arrays/</a>
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