

**Develop an Understanding of the Higher Order Skills Development through Use of Variety of Problem Solving Activities**

	<b>Task</b>	<b>Reasoning</b>	<b>Communicating and Expressing</b>
1.	Barrier Game Spatial Relations (Level A1: A2: See Manual p.32)	<ul style="list-style-type: none"> <li>• Recognise and create sensory patterns</li> <li>• Justify the processes and results of activities</li> </ul>	<ul style="list-style-type: none"> <li>• Discuss and explain mathematical activities</li> <li>• Record the results of mathematical activities concretely and using diagrams, pictures and numbers</li> <li>• Discuss problems presented concretely, pictorially or orally</li> </ul>
2.	Nets of 3-D Shapes (Level D2: See Manual p.138-140)	<ul style="list-style-type: none"> <li>• Make hypotheses and carry out experiments to test them</li> <li>• Make informal deductions</li> <li>• Search for and investigate mathematical patterns and relationships</li> <li>• Reason systematically in a mathematical context</li> <li>• Justify processes and results of mathematical activities, problems and projects</li> </ul> <p>Van Hiele Level 2: Ordering or Informal Deductive (verbal skills) Children at the informal deduction level not only think about properties but also are able to notice relationships within and between figures. At this level, children are able to formulate meaningful definitions. At this level, children are also able to make and follow informal deductive arguments. Ex: "All squares are rectangles, but not all rectangles are squares."</p>	<ul style="list-style-type: none"> <li>• Discuss and explain the processes used and the results of mathematical activities, problems and projects in an organised way</li> <li>• Listen to and discuss other children's mathematical descriptions and explanations</li> <li>• Discuss and record the processes and results of mathematical work using various methods</li> <li>• Discuss problems and carry out analysis</li> </ul>
3.	Discovering Angles using Angles or Geo-Strips (Level B7: C8: C9: See Manual p.87, 128- 131)	<p>LEVEL B</p> <ul style="list-style-type: none"> <li>• Classify objects into logical categories</li> <li>• Make guesses and carry out experiments to test them</li> <li>• Recognise and create mathematical patterns and relationships</li> <li>• Justify the processes and results of mathematical activities</li> </ul>	<p>LEVEL B</p> <ul style="list-style-type: none"> <li>• Listen to and discuss other children's mathematical descriptions and explanations</li> <li>• Discuss and explain mathematical activities</li> <li>• Discuss and record the results of mathematical activities using diagrams pictures and symbols</li> <li>• Discuss problems presented pictorially or orally (LC 'and carry out analyses)</li> </ul>

		<p>LEVEL C</p> <ul style="list-style-type: none"> <li>• Make hypotheses and carry out experiments to test them</li> <li>• Make informal deductions involving a small number of steps</li> <li>• explore and investigate mathematical patterns and relationships</li> <li>• Reason systematically in a mathematical context</li> <li>• Justify processes and results of mathematical activities, problems and projects</li> </ul>	
4.	<p>Static Right Angle with Paper-Folding (Level B7: C8: C9: See Manual p.87, 128-131)</p>	<p>LEVEL B</p> <ul style="list-style-type: none"> <li>• Classify objects into logical categories</li> <li>• Make guesses and carry out experiments to test them</li> <li>• Recognise and create mathematical patterns and relationships</li> <li>• Justify the processes and results of mathematical activities</li> </ul> <p>LEVEL C</p> <ul style="list-style-type: none"> <li>• Make hypotheses and carry out experiments to test them</li> <li>• Make informal deductions involving a small number of steps</li> <li>• explore and investigate mathematical patterns and relationships</li> <li>• Reason systematically in a mathematical context</li> <li>• Justify processes and results of mathematical activities, problems and projects</li> </ul>	<p>LEVEL B</p> <ul style="list-style-type: none"> <li>• Listen to and discuss other children's mathematical descriptions and explanations</li> <li>• Discuss and explain mathematical activities</li> <li>• Discuss and record the results of mathematical activities using diagrams pictures and symbols</li> <li>• Discuss problems presented pictorially or orally (LC 'and carry out analyses)</li> </ul>

5.	Constructing 3-D shapes in Skeleton, Solid and Hollow Form (Level C3: See Manual p.103-107)	<p>LEVEL C</p> <ul style="list-style-type: none"> <li>• Make hypotheses and carry out experiments to test them</li> <li>• Make informal deductions involving a small number of steps</li> <li>• explore and investigate mathematical patterns and relationships</li> <li>• Reason systematically in a mathematical context</li> <li>• Justify processes and results of mathematical activities, problems and projects</li> </ul>	<p>LEVEL B</p> <ul style="list-style-type: none"> <li>• Listen to and discuss other children's mathematical descriptions and explanations</li> <li>• Discuss and explain mathematical activities</li> <li>• Discuss and record the results of mathematical activities using diagrams pictures and symbols</li> <li>• Discuss problems presented pictorially or orally (LC 'and carry out analyses)</li> </ul>
6.	Sorting 3-D Shapes using Threading Beads Level A2: See Manual p.34-39)	<ul style="list-style-type: none"> <li>• Classify objects into logical categories</li> <li>• Justify the processes and results of activities</li> </ul>	<ul style="list-style-type: none"> <li>• Discuss and explain mathematical activities</li> <li>• Record the results of mathematical activities concretely and using diagrams, pictures and numbers</li> <li>• Discuss problems presented concretely, pictorially or orally</li> </ul>
7.	Creating 2-D Shapes using Lollipop Sticks (Level A3: See Manual p.48)	<ul style="list-style-type: none"> <li>• Recognise and create pattern</li> <li>• Justify the processes/ results of the activities</li> </ul>	<ul style="list-style-type: none"> <li>• Record the results of mathematical activity concretely using diagrams and pictures.</li> <li>• Discuss problems represented concretely, pictorially or orally.</li> </ul>
8.	Co-ordinate Challenge (Level D8: See Manual p.161-163)	<p>LEVEL D</p> <ul style="list-style-type: none"> <li>• Make hypotheses and carry out experiments to test them</li> <li>• Make informal deductions involving a small number of steps.</li> <li>• Reason systematically in a mathematical context.</li> <li>• Justify processes and results of mathematical activities, problems and projects.</li> </ul>	<p>LEVEL D</p> <ul style="list-style-type: none"> <li>• Discuss and explain the processes used and the results of mathematical problems in an organised way.</li> <li>• Listen to and discuss other children's mathematical descriptions and explanations.</li> <li>• Discuss and record the processes and results of work using a variety of methods.</li> <li>• Discuss problems and carry out analyses.</li> </ul>

9.	Explore, Describe, Compare and Classify the Properties of 2-D Shapes (MDL) (Level C2: See Manual p.101, 110)	<p>LEVEL B</p> <ul style="list-style-type: none"> <li>• Classify objects into logical categories</li> <li>• Recognise and create mathematical patterns and relationships</li> <li>• Justify the processes and results of mathematical activities</li> </ul> <p>LEVEL C</p> <ul style="list-style-type: none"> <li>• Make hypotheses and carry out experiments to test them</li> <li>• Make informal deductions involving a small number of steps.</li> <li>• Explore and investigate mathematical patterns and relationships</li> <li>• Reason systematically in a mathematical context.</li> <li>• Justify processes and results of mathematical activities, problems and projects.</li> </ul>	<p>LEVEL B</p> <ul style="list-style-type: none"> <li>• Listen to and discuss other children’s mathematical descriptions and explanations</li> <li>• Discuss and explain mathematical activities</li> <li>• Discuss and record the results of mathematical activities using diagrams pictures and symbols</li> <li>• Discuss problems presented pictorially or orally</li> </ul> <p>LEVEL C</p> <ul style="list-style-type: none"> <li>• Discuss and explain the processes used and the results of mathematical problems in an organised way.</li> <li>• Listen to and discuss other children’s mathematical descriptions and explanations.</li> <li>• Discuss and record the processes and results of work using a variety of methods.</li> <li>• Discuss problems and carry out analyses.</li> </ul>
10.	Exploring Line Symmetry Using Pegboards (Level C6: See Manual p.118 - 123)	<p>LEVEL B</p> <ul style="list-style-type: none"> <li>• Recognise and create mathematical patterns and relationships</li> <li>• Justify the processes and results of mathematical activities</li> </ul> <p>LEVEL C</p> <ul style="list-style-type: none"> <li>• Use understanding of line symmetry to complete missing half of a shape, picture or pattern.</li> <li>• Explore and investigate mathematical relationships and patterns.</li> <li>• Reason systematically in a mathematical context.</li> </ul>	<p>LEVEL B</p> <ul style="list-style-type: none"> <li>• Listen to and discuss other children’s mathematical descriptions and explanations</li> <li>• Discuss and explain mathematical activities</li> <li>• Discuss and record the results of mathematical activities using diagrams pictures and symbols</li> <li>• Discuss problems presented pictorially or orally</li> </ul> <p>LEVEL C</p> <ul style="list-style-type: none"> <li>• Discuss and explain the processes used and the results of mathematical activities, problems and projects.</li> <li>• Listen to and discuss other children’s mathematical descriptions and explanations.</li> <li>• Discuss and record the processes and results of work using a variety of methods.</li> <li>• Discuss problems presented verbally or diagrammatically and carry out analyses.</li> </ul>

		<p>LEVEL D</p> <ul style="list-style-type: none"><li>• Make hypotheses and carry out experiments to test them</li><li>• Make informal deductions</li><li>• Reason systematically in a mathematical context.</li><li>• Search for and investigate mathematical patterns and relationships</li><li>• Justify processes and results of mathematical activities, problems and projects.</li></ul>	<p>LEVEL D</p> <ul style="list-style-type: none"><li>• Discuss and explain the processes used and the results of mathematical problems in an organised way.</li><li>• Listen to and discuss other children's mathematical descriptions and explanations.</li><li>• Discuss and record the processes and results of work using a variety of methods.</li><li>• Discuss problems and carry out analyses.</li></ul>
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