

### *Three-dimensional Space*



<p><b>Outcomes</b></p> <p>Early Stage 1</p> <ul style="list-style-type: none"> <li>› describes mathematical situations using everyday language, actions, materials and informal recordings MAe-1WM</li> <li>› uses concrete materials and/or pictorial representations to support conclusions MAe-3WM</li> <li>› manipulates, sorts and represents three-dimensional objects and describes them using everyday language MAe-14MG</li> </ul>	<p><b>Language</b></p> <p>object, shape, size, curved, flat, pointy, round, roll, slide, stack</p>
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Syllabus pp61 & 62

In Early Stage 1, the emphasis is on students handling, describing, sorting and representing the many objects around them. It is important that students are encouraged to use their own language to describe objects. Manipulation of a variety of real objects and shapes is crucial to the development of appropriate levels of imagery, language and representation.

Local landmarks include buildings, rivers, rock formations and bridges, as well as Aboriginal landmarks. Aboriginal landmarks may include contemporary landmarks and local points of interest. Local Aboriginal communities and education consultants can provide examples.

Teaching and Learning Activities	Notes/ Future Directions/Evaluation	Date
<p><b>Barrier Shapes</b></p> <p>In pairs, each student is given an identical set of three-dimensional objects eg 1 cube, 3 rectangular prism, 1 Cone, and 2 cylinders. Student A creates a construction using the objects and conceals it. They describe it to Student B who attempts to produce the same construction. Students compare constructions, swap roles and repeat the activity.</p> <p>Possible questions include:</p> <ul style="list-style-type: none"> <li>– could your partner follow your instructions?</li> <li>– what 3D objects did you use, describe your construction. How did you build it?</li> </ul>		

<p><b>Build a 3D tower</b>  Teacher builds a tower using a maximum of 5 blocks. Teacher describes tower in terms of 'these blocks stack on each other' 'I have put a cube then a cylinder' etc. Children individually use play dough to make a model of the tower.</p>		
<p><b>Construction Play</b>  Using construction materials to construct three dimensional objects.</p>		
<p><b>Cookie cutter patterns</b>  Cookie cutters and play dough are ideal for developing the notion of a relationship between an object and the shape of its faces. Children can then make a pattern. In pairs one child changes the pattern while the others eyes are closed and then tries to pick where the mistake is.</p> <p>Make 3D objects with plasticine encouraging children to use formal and informal names for the objects.</p>		
<p><b>Finding Objects</b>  Students have a piece of paper marked into four sections. Each section can have a picture label, e.g. box shapes, ball shapes, curly shapes, roller shapes. The students find objects in the classroom or playground and draw them in the appropriate space.</p> <div data-bbox="197 967 864 1241" style="border: 1px solid black; padding: 5px;"> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; width: 150px; height: 100px; position: relative;">  </div> <div style="border: 1px solid black; width: 150px; height: 100px; position: relative;">  </div> </div> </div>		



### Free Play (Three-dimensional Space)

In groups, students participate in free play using a wide variety of collectable and commercial materials on a regular basis eg

Lego, Duplo, boxes, everyday three-dimensional objects.

Free play sessions may also be used to practise teacher-directed activities.

Possible questions include:

- can you sort the three-dimensional objects?
- can you describe your sorting?
- can you describe the features of each three-dimensional object?

### Feely Box

Take a box. Cut a hole in one end and attach a piece of cloth or the end of an old sock so the children can put their hand through the hole without seeing what is inside the box. Place different objects in the box. Have the children draw what they feel.

### Junk Craft

Small group activity or independent creating 3D models. This could be free or teacher guided.

### Objects That Roll and Slide

Predicting and Investigating the movement of objects.

<p><b>Pipe Cleaner Shapes</b>  Students investigate the objects that can be made by bending and joining pipe cleaners. Students describe their shape and use drawings to record what they have made. Alternatively, the teacher may take photos.  <i>Variation:</i> Students could use connecting straws or other appropriate material.</p>		
<p><b>Predicting Movement</b>  Students are asked to sort a collection of objects into those they predict will roll and those that will slide.  Using a variety of materials, students make a device that will help them to test their predictions. Students explain why some objects roll and some objects slide and reflect on their predictions. Students use drawings and labels to show how the objects were sorted.  <i>Extension:</i> Students investigate and describe the effect of varying the steepness of a ramp.</p>		
<p><b>Shape Walk (Three-dimensional Space)</b>  Students walk around the school and describe the various shapes they see eg 'These balls look round.' Students are asked to use drawings to show what they found. These are collated and placed in a class book for others to share.</p>		
<p><b>Sorting and Classifying 3D Objects</b>  The teacher collects a variety of objects (some with similar features).  <b>Part A</b>  Students are asked to sort the objects into groups e.g. rough or smooth, colour, size, shape. Students are asked to explain their grouping.  Students then sort the objects in a different way. For example, if the students sort them according to their colour the teacher could ask 'If these objects were all red, how would you sort them?'  <b>Part B</b>  In small groups, students take turns to sort the objects for others to determine and explain how they have been sorted.  Possible questions include:  - how many different ways can you sort the objects?</p>		

<ul style="list-style-type: none"> <li>- how these are objects the same or different? Can you name each object?</li> </ul>		
<p><b>Tracing Objects</b></p> <p>In pairs, students make a design or picture by tracing around the faces of various objects eg make a picture of a robot by tracing a variety of objects. Students share and describe their pictures and are asked to:</p> <ul style="list-style-type: none"> <li>- explain the position of particular shapes</li> <li>- discuss the ways different students used a particular shape, and</li> <li>- identify any shape used in different orientations.</li> </ul>		
<p><b><u>Using Technology to Teach Mathematics</u></b></p> <p><b>Mathletics:</b></p> <ul style="list-style-type: none"> <li>• Match the Solid 1</li> <li>• Match the Solid 2</li> <li>• Match the Object</li> </ul> <p><b>Ideal Resources:</b></p>		
<p><b><u>Story Books</u></b></p> <ul style="list-style-type: none"> <li>- I spy shapes in art by Lucy Micklethwait</li> </ul>		
<p><b>Other Activities</b></p>		