

Area			
Outcomes Early Stage 1 › describes mathematical situations using everyday language, actions, materials and informal recordings MAe-1WM › uses concrete materials and/or pictorial representations to support conclusions MAe-3WM › describes and compares areas using everyday language MAe-10MG		Language area, surface, closed shape, inside, outside, bigger than, smaller than, the same as, superimposing, superpositioning.	
NUMERACY CONTINUUM Measurement <i>Knowledge of the structure of units in length, area and volume.</i>	Emergent structure Attempts direct comparison without attending to alignment. May attempt to measure indirectly without attending to gaps or overlaps.	Direct alignment Directly compares the size of two objects (alignment).	Transitive comparison Directly compares the size of three or more objects (transitivity). Uses indirect comparison by copying the size of one of the objects.
Syllabus pp53 & 54 Area relates to the measurement of two-dimensional space in the same way that volume and capacity relate to the measurement of three-dimensional space. The attribute of area is the amount of surface (either flat or curved) and can be measured in square units, eg square centimetres (cm ²), square metres (m ²). In Early Stage 1, students develop an awareness of the attribute of area and some of the language used to describe area. They develop an awareness of the attribute of area through covering activities, through colouring in, and as comparisons of area are made. Students should be given opportunities to compare: › two similar shapes of different areas where one fits inside the boundary of the other › two different-shaped areas where one can be placed on top of the other › two shapes where one shape can be cut up and pasted onto the other. Once students can compare two areas, they should then be given the opportunity to order three or more areas. This process requires students to understand that if A is larger than B, and B is larger than C, then A is larger than C.			

Teaching and Learning Activities	Notes/ Future Directions/Evaluation	Date
<p>Bag of Shapes</p> <p>The teacher prepares several bags containing a variety of shapes. The students are organised into small groups. Each group is given a bag of shapes. In turns, each student randomly selects two of the shapes from the bag, estimates which one is bigger, and superimposes the shapes to test their prediction. They share their observations with the group. Students are asked to describe how they worked out which shape was bigger and to record their comparisons.</p> <p>Possible questions include:</p> <ul style="list-style-type: none"> - Can you describe what you have done? - How did you compare these two shapes? 		
<p>Closed and Open</p> <p>Given lengths of string or ribbon, students make lines and then shapes with the material and then draw these. Students indicate the area of the shape. Whole class join several lengths to make a large area. Students measure the area, in bodies, by lying down within the shape.</p> <p>Students should:</p> <ol style="list-style-type: none"> 1. use area vocabulary: <i>surface, inside, outside, shape, area, boundary, large area, small area</i> 2. make closed shapes; indicate the space enclosed by the boundary 3. indicate the surface they are referring to. 		
<p>Doll's Quilt</p> <p>Students are given a piece of art paper and are asked to design a patchwork quilt by covering it with small coloured paper shapes. The small shapes can be made by tearing or cutting regular or irregular shapes.</p> <p>Possible questions include:</p> <ul style="list-style-type: none"> - Did you cover the whole quilt? - Which shape worked best? - Were there any overlaps or gaps? Why? 		
<p>Exploration</p> <p>Reinforce the concept of area and give students real-life opportunities to estimate</p>		

area and/or compare the areas of 2 surfaces by placing identical informal units in rows or columns without gaps or overlaps.

Questioning could include:

- *What kind of shape have we got?*
- *What could we cover the area of the shape with?*
- *Can you estimate how many of the chosen object we would need to cover this area?*
- *Can they fit better if we put them another way?*
- *How many objects did we need to cover the area?*
- *Are there any little spaces, not covered?*

Find a Bigger Area

In pairs, students draw a shape on paper and are asked to find three areas that are bigger, smaller or about the same size.

Students discuss how they compared the areas. The teacher models comparing by superimposing one shape over another.

Students' responses are listed in a table.

Bigger	Smaller	About the same

Handprint Detective

The teacher presents the following story:

'This morning I found a handprint in the classroom. I have made copies of the handprint so that we can find who it belongs to.'

Possible questions include:

- can you work out if your hand is bigger, smaller or about the same area as the handprint?

Students superimpose their hand onto the handprint. Students explain how they checked if their hand was a match, and if not, whether their hand is bigger or smaller than the handprint.

Order The Faces

Each student brings in a box from home, (e.g. cereal, tissue, toothpaste, foodwrap).

<p>Students select and paint one of the faces to compare the area of the face from the box they have chosen.</p> <p>In small groups of four, students compare and order the areas of the selected faces. Write or draw how they ordered the faces.</p>		
<p>Shoe Prints</p> <p>Students work in small groups to trace each student's shoe on paper and cut these out. They superimpose the shoe-prints to find who has the largest or smallest shoeprint and explain how they found out. Place the shoe-prints in order by comparing the areas.</p> <p>Note: Check that students do not confuse the longest shoe with the shoe which has the greatest area.</p>		
<p>Tablecloths</p> <p>Make tablecloths to cover their desks. Discuss whether a tablecloth has the same area as their desk or whether it is larger or smaller in area.</p>		
<p><u>Using Technology to Teach Mathematics</u></p>		
<p><u>Story Books</u></p> <ul style="list-style-type: none"> - Six feet long and three feet wide by Jeannie Billington and Nicola Smee - Milestones in Maths - Big and small by Jim Pipe - How big is a foot? By Rolf Myller 		
<p>Other Activities</p>		

