LEVEL: Foundation	CONTENT: Geometry	FOCUS: 2D shapes & 3D objects
In the Classroom		
PURPOSE	- Use materials to create 2D shapes - Identify 2D shapes and 3D objects - Use everyday language to describe features of shapes - Sort 2D shapes and 3D objects - Justify reason for classifying different shapes	
WARM UP	**Making Shapes** Divide the students into groups of 4 – give each group a large circle of elastic (approx. 3m in circumference) Ask the students to make shapes using their large elastic band - students then need to explain some of the features or properties of their shape Teacher (or student) calls out shapes that everyone tries to make then justify	
EXPLICIT TEACHING & LEARNING	**Which one doesn't belong? (WODB)** Provide students with a range of 2D shapes and 3D objects (e.g. pattern blocks, attribute blocks, tangram pieces, wooden 3D shapes, etc.) Teacher models choosing 4 shapes – 3 that are similar and one that is different Teacher challenges students to explain, "Which one doesn't belong?" Students are then given opportunity to choose own 4 shapes and to challenge a partner (or teacher) to guess which one doesn't belong, explaining reason Encourage students to talk about the shape's features and properties, rather than simple the colour, size or material Take photos of some WODB examples and share and discuss as a class	
DISCUSSION/KEY QUESTIONS	- What shape have you made? - How do you know? - Can you make any other shapes? - What shapes have you chosen? - Which shape doesn't belong? - Is there another way to sort the shapes? - Can we use something other than colour (size, material, features, properties, etc.) - What are some of the features of shapes? - What are the different properties of shapes? - Does turning the shape change it?	
DELIBERATIVE PRACTICE	The focus of this activity is to discover what students know shapes, including their features and properties. What language are students using to describe and sort shapes? How can we as teachers help students increase their shape vocabulary?	
REFLECTION	Challenge students to identify and justify WODB for different students' examples.	
RESOURCES	A collection of shape blocks Long circles of elastic (approx. 10mm thick & 3m in circumference) Which one doesn't belong? http://wodb.ca/	

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Curriculum Connections

CONTENT	**EARLY STAGE 1 – TWO-DIMENSIONAL SPACE** Sort, describe and name familiar two-dimensional shapes in the environment (ACMMG009) • identify, represent and name circles, triangles, squares and rectangles presented in different orientations, e.g. triangles • identify circles, triangles, squares and rectangles in pictures and the environment, including in Aboriginal art (Problem Solving) • ask and respond to questions that help identify a particular shape (Communicating, Problem Solving) • sort two-dimensional shapes according to features such as size and shape • recognise and explain how a group of two-dimensional shapes has been sorted (Communicating, Reasoning) • manipulate circles, triangles, squares and rectangles, and describe their features using everyday language, e.g. 'A square has four sides' • turn two-dimensional shapes to fit into or match a given space (Problem Solving) • make representations of two-dimensional shapes using a variety of materials, including paint, paper, body movements and computer drawing tools • make pictures and designs using a selection of shapes, e.g. make a house from a square and a triangle (Communicating) • draw a two-dimensional shape by tracing around one face of a three-dimensional object • identify and draw straight and curved lines • compare and describe closed shapes and open lines • draw closed two-dimensional shapes without tracing • recognise and explain the importance of closing the shape when drawing a shape (Communicating, Reasoning) **EARLY STAGE 1 – THREE-DIMENSIONAL SPACE** Sort, describe and name familiar three-dimensional objects in the environment (ACMMG009) • describe the features of familiar three-dimensional objects, such as local landmarks including Aboriginal landmarks, using everyday language, e.g. flat, round, curved • describe the difference between three-dimensional objects and two-dimensional shapes using everyday language (Communicating) • sort three-dimensional objects and explain the attributes used to sort them, e.g. colour, size, shape, function • recognise how a group of objects has been sorted, e.g. 'These objects are all pointy' (Communicating, Reasoning) • recognise and use informal names for three-dimensional objects, e.g. box, ball • manipulate and describe a variety of objects found in the environment • manipulate and describe an object hidden from view using everyday language, e.g. describe an object hidden in a 'mystery bag' (Communicating) • predict and describe the movement of objects, e.g. 'This will roll because it is round' • use a plank or board to determine which objects roll and which objects slide (Problem Solving) • make models using a variety of three-dimensional objects and describe the models, e.g. 'I made a model of a person using a ball and some blocks' • predict the building and stacking capabilities of various three-dimensional objects (Reasoning)
WHAT CAME BEFORE	Students will have a basic knowledge of shape names. Students may use terms for 3D and 2D shapes interchangeable and may 'make-up' words for shapes like long square to describe a redactable. If this happens acknowledge the student's effort and say something like, "in maths that shape is called a rectangle."
WHAT COMES NEXT	Students begin to develop a more formal understanding of the terms used to describe the features (or properties of shapes). It is best to use the correct terminology from the beginning. For example, instead of saying a rectangle has 2 long sides and 2 short sides, it is better to say that opposite sides are equal. With this definition it is clearer that a square is also a rectangle.
VOCABULARY	2D shapes, two-dimensional shapes, 3D objects, three-dimensional objects, dimension, triangle, square, rectangle, etc., cube, sphere, prism, pyramid, features, properties, attributes, colours, size, sides, corners, edges, faces, orientation, perspective, classify, sort, explain, justify

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MISCONCEPTIONS	Students may be able to identify some features of shapes, such as sides or corners, but may not be able to provide a definition for these features. Also, be wary of students saying that circles have sides - circles have a curve, in maths, sides are straight. A diamond is called a rhombus if it has equal length sides and equal angles and a parallelogram, if the opposite sides and opposite angles are equal. Students may also believe that if a shape is turned (i.e. its orientation is changed) the shape changes its name, for example, this shape may be called an upside-down triangle It is important to avoid always presenting prototype shapes, e.g. shapes orientated in the traditional or most common way.
WHAT PROFICIENCIES ARE TO BE UTILISED? **Understanding** **Fluency** **Problem Solving** **Reasoning** **Communicating (NSW)** **Justifying (NSW)**	**Foundation (Australian Curriculum)** **Understanding** includes connecting names, numerals and quantities **Fluency** includes readily counting numbers in sequences, continuing patterns and comparing the lengths of objects **Problem-solving** includes using materials to model authentic problems, sorting objects, using familiar counting sequences to solve unfamiliar problems and discussing the reasonableness of the answer **Reasoning** includes explaining comparisons of quantities, creating patterns and explaining processes for indirect comparison of length **EARLY STAGE 1 OUTCCOMES** • 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) • manipulates, sorts and represents three-dimensional objects and describes them using everyday language (MAe-14MG) • manipulates, sorts and describes representations of two-dimensional shapes, including circles, triangles, squares and rectangles, using everyday language (MAe-15M)
ASSESSMENT	Teachers take a photo of students WODB (Which one doesn't belong) Students give reason explaining why a particular shape doesn't belong (either orally or in books)

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