

TITLE: Patterns and Shapes Stages: ES1 S1 S2 S3 (K–6)

A multi-stage integrated unit for students from Kindergarten to Year 6.

Focus: This unit explores patterns and shapes in the environment. It is designed for students in multi-stage classes.

Introduction: This unit provides opportunities for students to explore patterns and shapes in the environment. It integrates Space and Geometry, Patterns and Algebra and Working Mathematically strands with English, PDHPE and Creative Arts. It encourages the use of a range of information and communication technologies (ICT). It is possible for the unit to be taught as a whole or for one or two learning sequences to be taught separately.

All learning experiences could be used as assessment activities depending on the purpose of the specific activity. Teachers can choose a learning activity for assessment appropriate for the students of the class. [Click here for Assessment for Learning](#)

The unit aims to promote student learning through the integration of outcomes across four key learning areas. Teachers could choose to begin at any of the learning sequences, depending on the students’ prior experiences. Teachers choose the outcomes and activities that are most appropriate that meet the needs of their students. Teachers are encouraged to further develop the unit to suit the needs of their students.

Outcomes addressed in this unit

KLA	Strand	EARLY STAGE 1	STAGE 1	STAGE 2	STAGE 3
Mathematics	<i>Space and Geometry Two-dimensional Space</i>	SGES1.2 Manipulates, sorts and describes representations of two-dimensional shapes using everyday language.	SGS1.2 Manipulates, sorts, represents, describes and explores various two-dimensional shapes.	SGS2.2a Manipulates, compares, sketches and names two-dimensional shapes and describes their features.	SGS3.2a Manipulates, classifies and draws two-dimensional shapes and describes side and angle properties.
	<i>Patterns and Algebra</i>	PAES1.1 Recognises, describes, creates and continues repeating patterns and number patterns that increase or decrease.	PAS1.1 Creates, represents and continues a variety of number patterns, supplies missing elements in a pattern and builds number relationships.	PAS2.1 Generates, describes and records number patterns using a variety of strategies and completes simple number sentences by calculating missing values.	PAS3.1a Records, analyses and describes geometric and number patterns that involve one operation using tables and words.
	Working Mathematically – <i>Questioning</i>	WMES1.1 Asks questions that could be explored using mathematics in relation to Early Stage 1 content.	WMS1.1 Asks questions that could be explored using mathematics in relation to Stage 1 content.	WMS2.1 Asks questions that could be explored using mathematics in relation to Stage 2 content.	WMS3.1 Asks questions that could be explored using mathematics in relation to Stage 3 content.
	Working Mathematically – <i>Applying Strategies</i>	WMES1.2 Uses objects, actions, imagery, technology and/or trial and error to explore mathematical problems.	WMS1.2 Uses objects, diagrams, imagery and technology to explore mathematical problems.	WMS2.2 Selects and uses appropriate mental or written strategies, or technology, to solve problems.	WMS3.2 Selects and applies appropriate problem-solving strategies, including technological applications, in undertaking investigations.

KLA	Strand	EARLY STAGE 1	STAGE 1	STAGE 2	STAGE 3
	<i>Working Mathematically – Communicating</i>	WMES1.3 Describes mathematical situations using everyday language, actions, materials and informal recordings.	WMS1.3 Describes mathematical situations and methods using everyday and some mathematical language, actions, materials, diagrams and symbols.	WMS2.3 Uses appropriate terminology to describe, and symbols to represent, mathematical ideas.	WMS3.3 Describes and represents a mathematical situation in a variety of ways using mathematical terminology and some conventions.
English	<i>Talking and Listening</i>	TES 1.2 Demonstrates basic skills of classroom and group interaction, makes brief oral presentations and listens with reasonable attentiveness.	TS1.2 Interacts in more extended ways with less teacher intervention, makes increasingly confident oral presentations and generally listens attentively.	TS2.2 Interacts effectively in groups and pairs, adopting a range of roles, uses a variety of media and uses various listening strategies for different situations.	TS3.2 Interacts productively and with autonomy in pairs and groups of various sizes and composition, uses effective oral presentation skills and strategies and listens attentively.
	<i>Writing</i>	WES1.9 Engages in writing texts with the intention of conveying an idea or message.	WS1.9 Plans, reviews and produces a small range of simple literary and factual texts for a variety of purposes on familiar topics for known readers.	WS2.9 Drafts, revises, proofreads and publishes well-structured texts that are more demanding in terms of topic, audience and written language features.	WS3.9 Produces a wide range of well-structured and well-presented literary and factual texts for a wide variety of purposes and audiences using increasingly challenging topics, ideas, issues and written language features.
PDHPE	<i>Communicating</i>	COES1.1 Expresses feelings, needs and wants in appropriate ways.	COS1.1 Communicates appropriately in a variety of ways.	COS2.1 Uses a variety of ways to communicate with and within groups.	COS3.1 Communicates confidently in a variety of situations.
	<i>Interpersonal relationships</i>	IRES1.11 Identifies how individuals care for each other.	IRS1.11 Identifies the ways in which they communicate, cooperate and care for others.	IRS2.11 Describes how relationships with a range of people enhance wellbeing.	IRS3.11 Describes roles and responsibilities in developing and maintaining positive relationships.
Creative Arts	<i>Visual Arts</i>	VAES1.2 Experiments with a range of media in selected forms.	VAS1.2. Uses the forms to make artworks according to varying requirements	VAS2.2 Uses the forms to suggest the qualities of subject matter.	VAS3.2 Makes artworks for different audiences, assembling materials in a variety of ways.
		VAES1.3 Recognises some of the qualities of different artworks and begins to realise that artists make artworks.	VAS1.3 Realises what artists do, who they are and what they make.	VAS2.3 Acknowledges that artists make artworks for different reasons and that various interpretations are possible.	VAS3.3 Acknowledges that audiences respond in different ways to artworks and that there are different opinions about the value of artworks.
		VAES1.4 Communicates their ideas about pictures and other kinds of artworks.	VAS1.4 Begins to interpret the meaning of artworks, acknowledging the roles of artist and audience.	VAS2.4 Identifies connections between subject matter in artworks and what they refer to, and appreciates the use of particular techniques.	VAS3.4 Communicates about the ways in which subject matter is represented in artworks.

Learning experiences

Outcomes				Early Stage 1	Stage 1	Stage 2	Stage 3	Resources
ES1	S1	S2	S3	square, rectangle, triangle	hexagon, rhombus, trapezium	pentagon, octagon, trapezium, parallelogram	isosceles triangle, scalene triangle, equilateral triangle	
SGES1.2	SGS1.2	SGS2.2a	SGS3.2a					
WMES1.1	WMS1.1	WMS2.1	WMS3.1					<p>Set of cards made up on A4 cut into:</p> <ul style="list-style-type: none"> • name of shape • description of properties • drawing <p>Pattern or attribute blocks Polygon shapes Magnetic polygons Coloured paper pre-cut for ES1 and S1 Chart paper Cardboard templates of varying sizes and variations of polygons</p> <p>** Give students a variety of equipment and ask them to draw a picture made up from given polygons and identify each shape by creating a colour-coded legend.</p>
WMES1.2	WMS1.2	WMS2.2	WMS3.2					
TES1.2	TS1.2	TS2.2	TS3.2					
VAES1.3	VAS1.3	VAS2.3	VAS3.3					
COES1.1	COS1.1	COS2.1	COS3.1					
WMES1.2	WMS1.2	WMS2.2	WMS3.2					
PAES1.1	PAS1.1	PAS2.1	PAS3.1a					
				<p><i>Learning sequence 1 – Polygons</i></p> <ul style="list-style-type: none"> • In small mixed groups, students sort box of attribute blocks or shape cards. (See appendix for master copy.) Students can group according to colour, naming the shape, drawing the attributes for each. Students take turns at choosing a shape/card for each of the following. • Each group takes away cards/blocks and match drawings to names and properties. Sort shapes into groups that have the same properties. • In their groups, students play ‘And now we present Polygons’ organising a presentation of their polygons eg students can use their bodies to create the shape or they can say properties of the shape. • Display a range of artwork that focuses on the use of two-dimensional shapes, eg Kandinsky, Mondrian, Klee, Billy Stockman Tjapaltjarri and Willy Tjungarrayi. (See resource list) Students identify 2D shapes and discuss how the shapes are used. • Groups play barrier game with one student holding the card and describing properties and group having a selection of shapes. • Students use a drawing program to draw given shapes. • Students create a pattern or series of patterns using autoshapes or shape stamps in programs such as Word and KidPix. • Students identify various polygons around the classroom. Discuss why certain shapes are used for various objects and building parts. 				

Outcomes				Early Stage 1	Stage 1	Stage 2	Stage 3	Resources
ES1	S1	S2	S3	square, rectangle, triangle	hexagon, rhombus, trapezium	pentagon, octagon, trapezium, parallelogram	isosceles triangle, scalene triangle, equilateral triangle	
SGES1.1	SGS1.1	SGS2.2a	SGS3.2a					
COES1.1 VAES1.4	COS1.1 VAS1.4	COS2.1 VAS2.4	COS3.1 VAS3.4	<p><i>Learning sequence 2 – Lines and Circles</i></p> <ul style="list-style-type: none"> Display artwork from various artists eg Eric Wilson <i>Abstract-the kitchen stove</i>, Ken Unsworth <i>Suspended stone circle II</i>, Christo and Jeanne-Claude <i>Wrapped Coast, Little Australia</i>, Bronwyn Bancroft <i>You don't even look Aboriginal</i>. (Diversity, Celebration of Art and Culture, Art Gallery of NSW kit.) Allow students to identify lines and shapes within each visual. Discuss concentric circles and lines in Aboriginal artwork. In pairs students make straight, curved, parallel, horizontal, vertical lines, and circles or ovals with string, paper, pencils, spaghetti, pasta shapes. Find and list examples of some lines in the classroom or outdoors. Students take digital photos and display in the classroom. Show students Miro's <i>Harlequin's Carnival</i>. Look at the use of shapes and lines that are made to look like animals and organisms. Students choose a shape and modify it to represent a living thing. Alternatively, students can look at Bridget Riley's <i>Opening</i> and experiment with two-dimensional shapes and lines. In small groups, students go on a treasure hunt and collect round objects of various sizes. <ul style="list-style-type: none"> <u>ES1 and S1</u>- Students glue spaghetti and string onto thick card in various ways, eg straight lines, curved lines, circles. Identify and label the lines. Students can use this as a template for printing. <u>S2 and S3</u>- Students use variety of circular objects, eg bottle tops, coins, compasses, from a collection of objects to create a design that includes circles, curved and straight lines. Glue string to the outlines. Label. Students can use this as a template for printing. <p>Writing</p> <ul style="list-style-type: none"> Students imagine their print is a gigantic landscape. They choose a starting point on their landscape and make their way across to another point. Students write about finding their way across the land using references to appropriate vocabulary. Using a drawing program on the computer students draw and fill overlapping circles: <ul style="list-style-type: none"> ES1 – Draw circles and fill. S1 – Add thick and thin horizontal, vertical, parallel lines to the circles. S2 – Add a variety of lines to the overlapping circle and fill with different colours. S3 – Students investigate quarter/half and full circles. Identify properties of a circle. Investigate making shapes inside the circle (eg square, triangle) and rotating them. 				<p>Diversity, Celebration of Art and Culture, Art Gallery of NSW kit</p> <p>Digital camera Length of string for each student Timer Collection of round objects Spaghetti</p> <p>PVA glue Thick card Paint rollers Paper Compasses Grid paper</p> <p>** Students print a copy of their design and label types of lines used.</p>
WMES1.3	WMS1.3	WMS2.3	WMS3.3					
WMES1.3	WMS1.3	WMS2.3	WMS3.3					
WES1.9	WS1.9	WS2.9	WS3.9					
WMES1.2	WMS1.2	WMS2.2	WMS3.2					

Outcomes				Early Stage 1	Stage 1	Stage 2	Stage 3	Resources
ES1	S1	S2	S3	turning shapes to fit spaces	tessellating shapes flip/slide/turn symmetrical shapes	tessellating shapes reflecting/ translating/rotating lines of symmetry	Rotational symmetry	
SGES1.1	SGS1.1	SGS2.2a	SGS3.2a					
IRES1.1	IRS1.1	IRS2.1	IRS3.1	<p><i>Learning sequence 3 – Symmetry and Tessellation</i></p> <ul style="list-style-type: none"> Group students in mixed age groups. In a large area students investigate how their bodies can turn, flip, slide, rotate. Using pattern blocks students investigate how shapes can turn, flip, slide, rotate. <ul style="list-style-type: none"> <u>ES1</u> – Use lego pattern blocks/pattern blocks to make a pattern. Students paste pattern onto cardboard. On the back draw lines to create a jigsaw. Cut jigsaw pieces. Students try to recreate the pattern by putting the jigsaw together. <u>S1 and S2</u> – Using pattern blocks students compare what happens when it flip/flip/flip, slide/slide/slide, turn/turn/turn. Students use two or more shapes to show a pattern then identify if it flips, slides or rotates. Students use autoshapes on Word to draw shapes and using the copy and paste function students create a tessellating pattern. Identify which shapes do and do not tessellate. <u>S3</u> – Students investigate various computer software programs that allow images or graphics to flip and rotate. Design a rotating symmetrical pattern using this function. 				<p>Pattern blocks Grid paper Coloured paper Precut 2D shapes and templates Jigsaws Mirrors</p>
WMES1.2	WMS1.2	WMS2.2	WMS3.2					
VAES1.2	VAS1.2	VAS2.2	VAS3.2					
				<ul style="list-style-type: none"> Look at examples of symmetrical patterns, tessellated artwork and rotational symmetry from a variety of sources. eg Aboriginal artwork, MC Escher’s engravings. Tiling and floor covering catalogues. Discuss shapes used and which shapes are flipped, turned, rotated etc. Identify lines of symmetry on various pictures and objects using a mirror. Categorise into symmetrical or non-symmetrical. Investigate lines of symmetry by folding paper shapes (ES1 & S1) regular polygons (S2 & S3) Hunt for symmetrical shapes around the classroom. S3-categorise into shapes that do/do not have rotational symmetry. 				<p>Tiling and floor catalogues Mirror</p>

Outcomes				Early Stage 1	Stage 1	Stage 2	Stage 3	Resources
ES1	S1	S2	S3	fold, cut, overlap, paint, paste, match different orientations	tangrams, combining shapes	draws different orientations, draws and resizes	enlarging and reducing	
SGES1.1 WMES1.1	SGS1.1 WMS1.1	SGS2.2a WMS2.1	SGS3.2a WMS3.1	<i>Learning sequence 4 – Combining, Enlarging and Reducing</i> <ul style="list-style-type: none"> In pairs students discuss and explain what they can do to change a square piece of paper. Share findings with the class 				Squares of paper Various shapes and size of paper Tangrams Wooden blocks Map of the school 1 cm, 2 cm grid paper Paint /Textas **ES1 – Paint a picture of the classroom. Explain how big it would be and why. **S1 – Using precut shapes and combinations of shapes students make a plan for new furniture in the classroom. **S2 – Design a plan of the classroom using the different orientations. **S3 – Enlarge a map of the school.
WMES1.2	WMS1.2	WMS2.2	WMS3.2	ES1 – Make a clown collage from squares of paper talking about different effects you can create to make the squares different. <ul style="list-style-type: none"> Take large cardboard shapes and match to smaller shapes. Match pieces of pre-cut paper to simple map of the school and reconstruct by overlapping. 				
				S1 – Cut a square into 2-3 pieces and describe the new shapes. Investigate and draw shapes that can be made from combining 2 triangles. <ul style="list-style-type: none"> Make a shape using three pattern blocks-show your partner, cover and then reconstruct. Create tangram puzzles from templates and your own designs. Create a design for pavers for a new school pathway. 				
				S2 – Use a large wooden block to make a small building. Use smaller blocks to make a scale model. Draw the top, side and front views. <ul style="list-style-type: none"> Investigate the resize function on various computer programs. Create and print a picture using copy, resize and paste. Draw a top-view picture of an area of the school. 				
				S3 – Reduce a simple picture copied onto 2 cm grid paper to 1 cm grid paper. <ul style="list-style-type: none"> Make a series of reductions of a computer graphic. Find stamp/enlarge/print in KidPix. Enlarge further on the photocopier, onto 1 cm grid paper. Enlarge by drawing onto 2 cm grid paper. 				
VAES1.2	VAS1.2	VAS2.2	VAS3.2	Display Imants Tillers <i>The Nine Shots</i> . http://www.arts.monash.edu.au/visual_culture/projects/diva/itillers.html Give students some background information about the artist’s work (found on the above website) and how he appropriates his images from Aboriginal artwork. Look at the way Tiller has transposed each square of the grid onto a small canvas board. Look at other artwork previously displayed for other activities. <ul style="list-style-type: none"> Activity: Discuss the various buildings and areas in the school. In small, mixed groups students identify an area that they would like to photograph using the digital camera. Ask students to look for interesting lines and shapes and/or combinations of these. As the students are looking through the viewfinder direct their attention to the direction of lines and shapes that overlap. 				Digital camera Art paper Pencils Paints

Outcomes				Early Stage 1	Stage 1	Stage 2	Stage 3	Resources
ES1	S1	S2	S3	fold, cut, overlap, paint, paste, match different orientations	tangrams, combining shapes	draws different orientations, draws and resizes	enlarging and reducing	
WMES1.2	WMS1.2	WMS2.2	WMS3.2	<i>Learning sequence 4 – Combining, Enlarging and Reducing cont</i> <ul style="list-style-type: none"> Students download their photos and print out. Again draw students' attention to interesting combinations of lines and shapes. Students use a viewing frame to concentrate on an interesting section of lines in the printout. They look at the lines and shapes between the spaces in between. Students can make a viewing frame using various 2D shapes. Students carefully draw what they see within the viewing frame, enlarging that section to fill the page. Hang students' artwork as a mobile or display together as a collage or mural in the wall. Extension activity: Students can make a lino or clay print from their enlarged line artwork created from the viewing frame. 				Cardboard cylinders, slide mounts or cardboard windows make good viewing frames.

Outcomes				Early Stage 1	Stage 1	Stage 2	Stage 3	Resources
ES1	S1	S2	S3	shapes in the environment shapes using body	compare angles in shapes arms and corners	perpendicular arms and vertex identifies/compares angles right/acute/obtuse smaller/larger than right angles angles in opening/ slopes	identify shapes by angle classify triangle by degrees reflex/straight angles at intersecting lines angles in rebounds and rotations	
SGES1.1	SGS1.1	SGS2.2a	SGS3.2a	<p><i>Learning sequence 5 – Angles</i></p> <ul style="list-style-type: none"> Identify angles on the body. Students can demonstrate how particular body parts make angles. In small groups students go on an angle hunt in the classroom/playground. Record and share with the class. Compile a list and add to it over the duration of the activities in this section. Display a shape that students can make with their body as an individual or in groups. Students describe the angle size and shape. Look at the artwork (eg <i>Suspended stone circles II</i> Card 15 in Diversity, Celebration of Art and Culture, Art Gallery of NSW kit) already displayed around the room. Students identify the angles and discuss angle types. 				Diversity, Celebration of Art and Culture, Art Gallery of NSW kit Attribute blocks Geostrips Paper and pencils Paint and water to make wash Spray bottle Blutac Scissors Glue
COES1.1	COS1.1	COS2.1	COS3.1	<p><u>ES1 & S1</u></p> <p>Sort attribute blocks into piles that have the same angle. Regroup into big and little corners.</p> <ul style="list-style-type: none"> Play ‘Simon Says’ with big and little. Go on a hunt in the classroom/playground using geostrips and report back to the class. <p>Students cover one side of an attribute block with contact and attach to a sheet of paper with the other side using blutac.</p> <ul style="list-style-type: none"> Spray a wash onto the sheet of paper over the shapes. Remove the shapes from the washed sheet. Trace around the corners and sides of the blocks onto coloured paper. Students cut out the shapes and glue onto the washed sheet. Students identify the corners and sides/arms of the shapes. 				
WMES1.2	WMS1.2			<p><u>ES1 & S1</u></p> <p>Sort attribute blocks into piles that have the same angle. Regroup into big and little corners.</p> <ul style="list-style-type: none"> Play ‘Simon Says’ with big and little. Go on a hunt in the classroom/playground using geostrips and report back to the class. <p>Students cover one side of an attribute block with contact and attach to a sheet of paper with the other side using blutac.</p> <ul style="list-style-type: none"> Spray a wash onto the sheet of paper over the shapes. Remove the shapes from the washed sheet. Trace around the corners and sides of the blocks onto coloured paper. Students cut out the shapes and glue onto the washed sheet. Students identify the corners and sides/arms of the shapes. 				

Outcomes				Early Stage 1	Stage 1	Stage 2	Stage 3	Resources
		WMS2.2		<p>S2 – Working in pairs, students use their elbow to practise making angles and identifying them as right angles.</p> <ul style="list-style-type: none"> • Students discuss angles that are smaller or bigger than a right angle. • Students play ‘Simon says ...’ using arms and head as the vertex. • Students go on a hunt looking for specific angles, perpendicular and or parallel lines. Students classify a collection of cardboard shapes according to angles/combinations of angles. • Students use a computer drawing program to design a pattern of repeating sharp / blunt angles. 				Cardboard shapes Computer **S2 – Students work with a partner identifying and recording angles around the room or in the playground.
			WMS3.2	<p>S3 –</p> <ul style="list-style-type: none"> • Working in pairs, students use their elbow to practise making angles and identifying them as right, acute, straight, obtuse, reflex and which angles are greater or smaller than each other. Students play ‘Simon says ...’ using arms and head as the vertex. • Students go on a hunt looking for specific angles, perpendicular and or parallel lines. • Use a protractor to measure angles on quadrilaterals to determine parallelogram, rectangles. Students group according to angle classification. Repeat with different types of triangles. • Students draw and label angles when given the degrees. • Students draw a range of random angles and then measure and label each angle • Provide a list of specific angle degrees and students draw and label angles 				Protractor Paper and pencil **S3 – Students search for different types of angles in the playground. Record and label.
WMES1.3	WMS1.3	WMS2.3	WMS3.3	<p>Concluding activity Whole class discuss where angles are found and types of angles used. Some possible prompts:</p> <ul style="list-style-type: none"> • Is one type of angle used more often than others? Why? • What would happen if a smaller/larger angle were used in its place? • Working in mixed age groups, students look at changing the angle sizes of playground equipment. What would it look like? Students record and illustrate their ideas. 				Paper and pencil

**Denotes the assessment activities. The activities listed are suggestions for teachers if they feel it appropriate to provide an assessment task for students during or after some of the learning experiences have been or are being completed. Here is a summary of possible assessment activities that can be done within each learning sequence:

Learning Sequence 1– Polygons

- Give students a variety of equipment and ask them to draw a picture made up from given polygons and identify each shape by creating a colour-coded legend.

Learning sequence 2– Lines and Circles

- Students print a copy of their design and label types of lines used.

Learning sequence 4 – Combining, Enlarging and Reducing

- ES1 – Paint a picture of the classroom. Explain how big it would be and why.
- S1 – Using precut shapes and combinations of shapes students make a plan for new furniture in the classroom.
- S2 – Design a plan of the classroom using the different orientations.
- S3 – Enlarge a map of the school.

Learning sequence 5– Angles

- ES1 & S1 – Students go on a shape treasure hunt collecting previously hidden shapes. Students trace and glue onto paper and name the shapes and label the corners.
- S2 – Students work with a partner identifying and recording angles around the room or in the playground.
- S3 – Students draw and label angles when given the degrees.

Resources

Brooks, P, 2000, *Super Structures (How it works)*, Horus Editions, Award Publications Limited, London.

Hewitt, S, 1995, *Shapes (Take off with)*, Evan Brothers Limited, London.

Hilton, N, 2001, *In My Backyard*, Lothian Port Melbourne, Victoria.

Mathematics K–6 Syllabus 2002.

Mathematics K–6 Sample Units of Work.

Moorditj, Australian Indigenous Cultural Expressions. Explore the cultural expressions of 110 Indigenous Australian artists. Presented by the National Art Gallery of Australia, Department of Communications and the Arts 1998. This CD-ROM is available through this website www.acn.net.au/articles/1998/05/ozcd.htm

Patilla, P, c1999, *Shapes (Maths Links)*, Heinemann Library, Oxford.

Stanley, S, 2000, *Seeing Numbers*, Working Title Press, Kent Town, SA.

Under the Southern Sun: Stories from the Australian Landscape. An interactive collection of Australian art with rare artist insights, interviews and comments. Presented by the National Art Gallery of Australia, Department of Communications and the Arts 1997. This CD-ROM is available through this website www.acn.net.au/articles/1998/05/ozcd.htm

Wheatley, N, 1999, *Luke's Way of Looking*, Hodder Headline, Australia.

Some suggested art books –

Arnason, HH, N986, *A History of Modern Art third edition revised and updated*, Thames and Hudson (Mondrian p340, Calder p523, Vasarely p500).

Devenport, R and Rees, V, 1991, *Art–I–facts Book 1 An exploration of art and design for junior secondary students*, McGraw Hill Book Company Australia.

Gaff, G, 1910–20 *The Birth of Abstract Art: A History of Modern Art*, Heinemann Library, Oxford, 2000.

Gregory, C (ed), 1986, *The Great Artists The 20th Century–Modern Art Volume 4 Part 80* Marshall Cavendish Ltd London.

Malcolm, L & Dewar, S, 1990, *About Art*, Science Press, Marrickville NSW. (Bridget Riley *Opening* p55)

MC Escher, Cordon Art, Holland, 1989, official website www.mcescher.com

Sortland, B, 1999, *Anna's Art Adventure*, Carolrhoda Books Inc, Minneapolis USA.

20th Century Art 1920-40: Realism and Surrealism: A History of Modern Art, David West Children's Books, London, 2000, (Miro *Harlequin's Carnival* p—)

Williams, D & Simpson, C, 1994, *Art Now Contemporary Art Post 1970*, McGraw Hill Book Company Australia. (Imants Tiller *The Nine Shots* p 28)

Kits
<i>Diversity, Celebration of Art and Culture</i> , Art Gallery of NSW. <i>Enter Art</i> , Department of Education and Training, 2000.
Websites
<p>www.wsws.org/articles/2001/aug2001/tula-a24.shtml Papunya Tula—the birthplace of contemporary Australian Aboriginal art – exhibition of 150 paintings by over 50 artists provided a detailed overview of the origins and development of contemporary Australian Aboriginal art</p> <p>www.curriculumsupport.nsw.edu.au/creativearts</p> <p>www.aaart.tv</p> <p>www.google.com/images and type in artist’s name</p> <p>www.artcyclopedia.com and choose category and artist</p> <p>www.artgallery.nsw.gov.au The Art Gallery of NSW</p> <p>www.mca.com.au The Museum of Contemporary Art</p> <p>www.sl.nsw.gov.au The State Library of NSW</p> <p>www.anmm.gov.au The Australian National Maritime Museum</p> <p>www.aboriginalaustralia.com</p> <p>www.npansw.org.au National Parks Association of NSW</p> <p>www.nationalparks.nsw.gov.au National Parks and wildlife service. Follow the links to the Aboriginal heritage site</p> <p>www.nga.gov.au The National Gallery of Australia</p> <p>www.naa.gov.au The National Archives of Australia</p>

Assessment for learning:

This unit of work incorporates *assessment* as an integral and essential component of good teaching and learning processes. *Assessment for learning* involves teachers planning how and when they will gather evidence of learning at the same time that they plan the work that students will do. It recognises the importance of assessment and promotes the active involvement of students in their own learning.

Outcomes are central to the decisions teachers make about the learning to be undertaken and the evidence of learning that needs to be collected. This evidence enables teachers to provide students with feedback on their learning and to determine how well students are achieving in relation to these outcomes.

Evidence of learning will assist teachers and students to decide whether they are ready for the next phase of learning or whether further learning experiences are needed to consolidate students’ knowledge, skills and understanding.

Teachers may need to incorporate a range of activities to accommodate the different ways students learn and to cater for the range of levels of students’ current knowledge, skills and understanding across the key learning areas.