Phase 1: Making explicit to yourself what is important enough to teach.

- 1. Identify the mathematical big ideas: Investigation 1: 2-D Shapes and Patterns, Sessions 1-10 EALR's:
 - ✓ 1.3.1: Use attributes of geometric shapes and properties of parallel and perpendicular to identify, name, compare and sort geometric shapes and figures
 - ✓ 1.3.3 Understand concepts of symmetry, congruence and similarity

Frameworks:

- ✓ Name and represent 2-D shapes (e.g. rectangles, triangles, circles, hexagons, trapezoids, and parallelograms)
- ✓ Recognize symmetrical figures
- 2. Critical Attributes or Big Ideas:
- Students will be observing, describing and comparing 2-D Shapes using vocabulary they learned to describe these shapes.
- Students will be grouping shapes according to common characteristics and students will become familiar with the names of 2-D shapes
- Students will begin noticing relationships between shapes (e.g. a hexagon can be made from 6 triangles)

3. Rationale:

Because the world is filled with various shapes, students will need to develop an understanding of what these shapes are and the characteristics of these shapes. As a result of teaching this particular unit, students will be able to observe, describe, compare, classify, represent and build with 2-D shapes. As they develop these skills, students will learn about the characteristics of a variety of 2-D Shapes and the relationships among these shapes.

4. Culminating Assessment or Projects

- Students will fill in a shape using different pattern blocks. They will record how many pattern blocks they used to fill in. This will help assess students' understanding of how different shapes can fill in a bigger shape.
- Students will create a project using the computer program *Shapes*.
- Students will find different ways to fill in a bigger shape.

Phase II: Modified Backward Planning

- Students will need to be aware of shapes in their environment
- Students will need to use their developed language to describe their shapes
- Students will need to know how to count and add
- Students will need to find combinations of shapes to fill a bigger region.
- Students will need to know how to use a mouse on the computer
- Students will need to know how to name and describe shapes

Phase III: Planning the Assessment Sign Posts

- As I am teaching, here is what I will be looking for: (eliciting students' ideas)
 - o Which students are participating, what they are saying

- o Are they recognizing shapes in the world around them?
- o I will listen to their descriptions.
- Provide a free explore time or math workshops that allow students to actually have these shapes in their hands to explore, etc.
- For the final products:
 - o Do students easily find shapes to fill in different parts of the bigger shape?
 - O Do students seem fluent in finding ways to fit shapes together in the interior of the outline?
 - o Are students seeing that shapes can be made in various ways?

Phase IV: Creating a Unit Overview (Each session equals a day)

Session 1: What shapes do you	Session 2: Same Shape, Different	Session 3: Describing 2-D	Session 4: Describing 2-D	Session 5: Describing 2-D
see?	Pieces	Shapes	Shapes	Shapes
1. Student	1. Student	1. Student	1. Student	1. Student
Activities: Students	Activities:	activities: students	activities: students	activities: students
are introduced to	Students will find	will be visualizing	will be visualizing	will be visualizing
shapes. They are	different ways to	and representing 2-	and representing 2-	and representing 2-
noticing shapes	fill a shape with	D shapes; filling	D shapes; filling	D shapes; filling
around them. They	pattern blocks.	an outline with	an outline with	an outline with
will be	They will record	shapes; finding	shapes; finding	shapes; finding
categorizing	which pattern	combinations of	combinations of	combinations of
shapes according	blocks they use,	shapes that fill an	shapes that fill an	shapes that fill an
to specific	how many of each	area; fitting shapes	area; fitting shapes	area; fitting shapes
characteristics that	shape, and the total	together or	together or	together or
we determine as a	number of blocks	breaking them	breaking them	breaking them
classroom.	they used. Their	apart to make	apart to make	apart to make
2. Instructional	work focuses on	other shapes;	other shapes;	other shapes;
Strategy: In order	filling an outline	counting and	counting and	counting and
to gain interest, I	with shapes;	adding; visualizing	adding; visualizing	adding; visualizing
will ask students to	finding	what shape to	what shape to	what shape to
look around in our	combinations of	select to continue a	select to continue a	select to continue a
classroom and to	shapes that fill a	design; visualizing	design; visualizing	design; visualizing
notice the types of	region; counting	how to move a	how to move a	how to move a
shapes they see. I	and adding.	shape so that it is	shape so that it is	shape so that it is
will also provide a	2. Instructional	oriented correctly	oriented correctly	oriented correctly
time in which	Strategy: I will use	to fill a design.	to fill a design.	to fill a design.
students are free	modeling, I will	These will occur	These will occur	These will occur
exploring their	reassure students	during math	during math	during math
shapes.	that there are	workshops (choice	workshops (choice	workshops (choice
3. Justification: I	multiple ways to	time) and working	time) and working	time) and working
am teaching these	find a solution.	on the computer.	on the computer.	on the computer.
ideas and skills	3. Justification:	2.Instructional	2.Instructional	2.Instructional
because students	This session is in	Strategy: I will be	Strategy: I will be	Strategy: I will be
need to become	part, part of my	suing modeling,	suing modeling,	suing modeling,
familiar with	assessment that I	encouraging	encouraging	encouraging
shapes around	will use as this part	students so share,	students so share,	students so share,
them-the different	of my unit. This	probing students	probing students	probing students

properties of them.	will be an	ideas and eliciting	ideas and eliciting	ideas and eliciting
What makes a	introduction of	ideas.	ideas.	ideas.
circle a circle?	how well students	3. Justification:	3. Justification:	3. Justification:
4. Evidence:	are understanding	These activities	These activities	These activities
Students will	concepts of	will help develop	will help develop	will help develop
demonstrate	shapes.	students' ideas	students' ideas	students' ideas
understanding	4. Evidence: I will	about shapes and	about shapes and	about shapes and
during this class	observe students	help them	help them	help them
session by	while they are	participate in	participate in	participate in
identifying various	working in groups.	discussion.	discussion.	discussion.
shapes, sharing out	For example: are	4. Evidence: I will	4. Evidence: I will	4. Evidence: I will
and drawing	they finding	observe the	observe the	observe the
appropriate shapes.	shapes in different	students while they	students while they	students while they
Homework will be	parts of the outline	are working on the	are working on the	are working on the
sent out to them	easily? Are	computers and see	computers and see	computers and see
and this will act as	students showing	what insights they	what insights they	what insights they
another piece of	how they make the	will offer in	will offer in	will offer in
evidence.	same shape in	discussion.	discussion.	discussion.
	different ways?			
	(For example,			
	filling the			
	trapezoidal shape			
	with three triangles			
	or a rhombus with			
	a triangle.			

Session 6:	Session 7: Three	Session 8: Filling	Session 9: Filling	Session 10: Filling
Describing 2-D	Ways to Fill an	Shapes	Shapes	Shapes
Shapes	Outline			
1. Student				
activities: students	activities: Students	Activities: The	Activities: The	Activities: The
will be visualizing	will be given an	students will be	students will be	students will be
and representing 2-	outline of a pattern	filling shapes	filling shapes	filling shapes
D shapes; filling	block design and	using the	using the	using the
an outline with	students will find	computer. These	computer. These	computer. These
shapes; finding	two or three	activities will take	activities will take	activities will take
combinations of	different ways to	place during math	place during math	place during math
shapes that fill an	fill it. The class	workshops.	workshops.	workshops.
area; fitting shapes	discusses the	2. Instructional	2. Instructional	2. Instructional
together or	different numbers	Strategy: Small	Strategy: Small	Strategy: Small
breaking them	of blocks they	group work??	group work??	group work??
apart to make	used and the most	3. Justification:	3. Justification:	3. Justification:
other shapes;	and fewest blocks	These three	These three	These three
counting and	that would fill a	sessions will help	sessions will help	sessions will help
adding; visualizing	particular outline.	students become	students become	students become
what shape to	2. Instructional	more familiar with	more familiar with	more familiar with
select to continue a	Strategy: Eliciting	filling shapes and	filling shapes and	filling shapes and
design; visualizing	students with	also how to use a	also how to use a	also how to use a
how to move a	different ways to	computer to	computer to	computer to
shape so that it is	fill an outline will	manipulate these	manipulate these	manipulate these
oriented correctly	engage them into	shapes.	shapes.	shapes.

	T	T	T	,
to fill a design.	thinking about	4. Evidence:	4. Evidence:	4. Evidence:
These will occur	these various ways	students will	students will	students will
during math	and how this plays	demonstrate	demonstrate	demonstrate
workshops (choice	out in the real	understanding by	understanding by	understanding by
time) and working	world.	recognizing shapes	recognizing shapes	recognizing shapes
on the computer.	3. Justification:	that fill an outline;	that fill an outline;	that fill an outline;
2.Instructional	Students will need	if they plan ahead,	if they plan ahead,	if they plan ahead,
Strategy: I will be	to become	how they are	how they are	how they are
suing modeling,	comfortable with	making a design.	making a design.	making a design.
encouraging	sharing ideas.			
students so share,	4. Evidence:			
probing students	Students will			
ideas and eliciting	demonstrate			
ideas.	understanding			
3. Justification:	through actively			
These activities	participating and			
will help develop	offering theories			
students' ideas	and appropriate			
about shapes and	explanations about			
help them	filling shapes.			
participate in				
discussion.				
4. Evidence: I will				
observe the				
students while they				
are working on the				
computers and see				
what insights they				
will offer in				
discussion				

Phase IV: Cognitive Demand of Tasks (Please see attached)