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)
  - Which students are participating, what they are saying

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

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

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

to fill a design. These will occur during math workshops (choice time) and working on the computer. *2.Instructional Strategy:* I will be suing modeling, encouraging students so share, probing students ideas and eliciting ideas. *3. Justification:* These activities will help develop students' ideas about shapes and help them 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	thinking about these various ways and how this plays out in the real world. 3. *Justification:* Students will need to become comfortable with sharing ideas. 4. *Evidence:* Students will demonstrate understanding through actively participating and offering theories and appropriate explanations about filling shapes.	4. *Evidence:* students will demonstrate understanding by recognizing shapes that fill an outline; if they plan ahead, how they are making a design.	4. *Evidence:* students will demonstrate understanding by recognizing shapes that fill an outline; if they plan ahead, how they are making a design.	4. *Evidence:* students will demonstrate understanding by recognizing shapes that fill an outline; if they plan ahead, how they are making a design.

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