

NIPISSING UNIVERSITY

# Assignment #3

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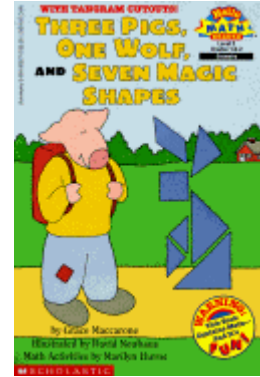
Children's Literature and Mathematics

Using "Three Pigs, One Wolf and Seven Magic Shapes"

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PJ 1

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**Three Pigs, One Wolf , and Seven Magic Shapes**  
**by Grace Maccarone**



**1. Summary of the Book:**

Three Pigs, One Wolf , and Seven Magic Shapes by Grace Maccarone is a mathematical version of a classic fairy tale. The three little pigs are given seven magic shapes and told to use them wisely. The first little pig uses the seven magic shapes to make a friend, the second little pig uses his seven magic shapes to make a candle and the third little pig uses her seven magic shapes to build a house. The third little pig survives and meets the wise pig from the classic fairy tale The Three Little Pigs (the one who built his house of bricks) and they marry. She takes apart her house and builds a boat with the seven magic shapes so she can go on a long honeymoon. The wolf finds them and tries to blow the boat to pieces but his huffs and puffs create a stronger wind that allows the couple to sail halfway around the world.

**2. Most appropriate age level (select ONE) and curricular math strand**

The most appropriate age level for this book is grade 2 because they can connect this story with the fairy tale The Three Little Pigs and can successfully use the tangram pieces for the activity we have chosen for them. Tangrams are used in the Geometry and Spatial Sense strand in math.

**3. Specific curricular expectations (limit to at most three). Select only the expectations addressed in your lesson, not all of the expectations that could be covered.**

- Compose and describe pictures, designs, and patterns by combining two-dimensional shapes (e.g., "I made a picture of a flower from one hexagon and six equilateral triangles.");
- Compose and decompose two-dimensional shapes (Sample problem: Use Power Polygons to show if you can compose a rectangle from two triangles of different sizes.);

- Create and describe symmetrical designs using a variety of tools (e.g., pattern blocks, tangrams, paper and pencil).
4. **Suggestions for discussion questions: Develop questions to stimulate a whole class discussion on the chosen math concept. Focus on developing open-ended Qs to be asked before, during and after the story reading. This can be thought of as the introduction to your lesson.**

**Before Reading:** What do you know about fairy tale stories? Show students a set of tangrams and ask them to identify each of the seven shapes. Show students the book cover and ask them if they recognize the tangram shapes as an animal.

**During Reading:** Throughout the book, when a tangram picture appears, pause reading and ask the students to identify the animal or object that is created from the tangram shapes. Ask students to identify the smaller geometric shapes within the larger picture.

**After Reading:** What does this story remind you of? How is this story different from The Three Little Pigs? What kind of animals or objects do you think you could make using the seven shapes?

5. **Create ONE mathematic activity/task for students to explore following the class discussion. Briefly describe the activity, group arrangements, manipulatives etc. Include handouts that you have created, including modified (if from the internet, reference accurately).**

In pairs, students will use plastic tangram sets to create their own animals or objects. The students will trace their creations on a piece of paper and choose a minimum of three of their pictures that they could use to later create a story during a Language Arts period. If students are struggling, they will be given outlines of animals and objects that they can use. (see handout).

**6. Critique the chosen book using Hellwig, Monroe & Jacobs' five categories: Accuracy, Visual and Verbal Appeal, Connections, Audience and "Wow" factor. Include a score out of six for each cat. Include justification for your critique (one or two paragraphs).**

- The book represents the mathematical concepts of tangrams accurately, however there is no mention of what the shapes are called. There is a lack of terminology used in the book. The story depicts the relationship between tangram shapes and the ability to use them to build objects such as boats, animals, candle sticks etc. Accuracy 4.5/6.
- The story is appealing, both visually and verbally because the book is not overpowered by mathematical language. The storyline is comical and children can relate this book to the famous fairytale The Three Little Pigs. The book is visually appealing because the illustrations are colorful and the tangram objects are easily recognizable. Visual and Verbal Appeal 5/6.
- The book is an excellent introduction and provides a framework for students to build a connection between tangrams and their experiences with fairytales. Connections 6/6.
- The intended audience for this book is primary students. As adults, we found the book entertaining and witty. Audience 5/6.
- Just when you think the story is over, it's not. After the third pig defeats the wolf, he marries the survivor from the original story of the Three Little Pigs, Wow! Wow factor 5.5/6.

**7. Self-assessment: see handout**

Criteria/Level	Level 4	Level 3	Level 2	Level 1
<b>Level of Completeness</b>	Assignment has all required components in greater detail (book abstract, expectations, exploratory student activity/ task, questions, book critique, self-assess)	Assignment has all required components (children’s book abstract, expectations, exploratory student activity/task, questions, book critique, self-assess)	Assignment has some required components (children’s book abstract, expectations, exploratory student activity/task, questions, book critique, self-assess)	Assignment has few required components (children’s book abstract, expectations, exploratory student activity/task, questions, book critique, self-assess)
<b>Questions</b>	Includes before/during/after questions; discussion questions are likely to interest learners and foster conceptual understanding. Most are open-ended and exploratory in nature.	Includes before/during/after questions; discussion questions are likely to interest learners and foster conceptual understanding. Some are open-ended and exploratory in nature.	Includes one/few of before/during/after questions; some discussion questions may interest learners and foster conceptual understanding. One/few are open-ended and exploratory in nature.	Lacks before/during/after questions; discussion questions are not likely to interest learners and foster conceptual understanding. None are open-ended and exploratory in nature.
<b>Quality of Writing</b>	The lesson has very few spelling/grammar errors. Overall writing quality is excellent and articulate. Activity is clearly defined and clear connections made to the expectations.	The lesson is mostly free of spelling/grammar errors. Overall writing quality is clear and articulate. Activity is clearly defined and clear connections made to the expectations.	The lesson has a number of spelling/grammar errors. Overall writing quality is unclear and satisfactory. Activity is unclearly defined and lacks connections made to the expectations.	The lesson has many spelling/grammar errors. Overall writing quality is poor and unsatisfactory. Activity is missing/unclear and lacks connections made to the expectations.
<b>Book Critique</b>	Critique of the book is very well-written, and is based on HMJ article. Each of five categories is treated separately and includes much detail.	Critique of the book is well-written, and is based on HMJ article. Each of five categories is treated separately and in adequate detail.	Critique of the book is somewhat articulate, and is based on HMJ article. Categories are not treated separately and lacks specificity.	Critique of the book is poorly written, and/or not based on HMJ article. Categories are not treated separately and lacks any specifics.

**Overall assessment: 19/20**

- We gave ourselves a level 3 in the categories of Level of Components and Book Critiques because we did not go in too much detail while writing the critique. However, we feel that our questions and overall quality of writing is at a level 4.

<b>1. Lesson Plan Information</b>	
<b>Subject/Course:</b> Mathematics	<b>Name:</b> Tanya Gregoire and Stephanie Duguay
<b>Grade Level:</b> GRADE 2	<b>Date:</b> January 23, 2009
<b>Topic:</b> Geometry and Spatial Sense - Tangrams	<b>Time and Length of Period:</b> 9:05-10:00am (55 minutes)

<b>2. Expectation(s) and Learning Skills</b>
<p><b>The students will:</b></p> <ul style="list-style-type: none"> <li>• Compose and describe pictures, designs, and patterns by combining two-dimensional shapes (e.g., "I made a picture of a flower from one hexagon and six equilateral triangles.");</li> <li>• Compose and decompose two-dimensional shapes (Sample problem: Use Power Polygons to show if you can compose a rectangle from two triangles of different sizes.);</li> <li>• Create and describe symmetrical designs using a variety of tools (e.g., pattern blocks, tangrams, paper and pencil).</li> </ul> <p><b>Today, students will:</b></p> <ul style="list-style-type: none"> <li>- Listen to the story of Three Pigs, One Wolf, and Seven Magic Shapes</li> <li>- Create animals and objects using tangram shapes</li> </ul>

<b>3. Pre-assessment</b>
<p><b>A. (i) Students</b></p> <ul style="list-style-type: none"> <li>- Can identify shapes; square, triangle and parallelogram.</li> <li>- Can compose pictures using two dimensional shapes</li> <li>- Can identify and describe shapes within other shapes</li> <li>- Are familiar with the fairy tale The Three Little Pigs</li> <li>- Have been exposed to tangram pieces and outlines</li> </ul> <p><b>(ii) Differentiation of content, process, and/or product (may be accommodations and/or modifications)</b></p> <p>Students who are unable to create their own shapes will be given outlines to work from.          Preferential seating for certain students while reading the story</p>
<p><b>B. Learning Environment</b></p> <ul style="list-style-type: none"> <li>• Students gather at the carpet area for the telling of "Three Pigs, One Wolf, and Seven Magic Shapes".</li> <li>• Students will do the activity at their desks in pairs.</li> </ul>
<p><b>C. Resources/Materials</b></p> <p>Book: The Three Little Pigs, One Wolf, and Seven Magic Shapes          Sets of tangrams</p>

White paper  
Colouring pencils  
Handouts of outlines for the tangram shapes

#### **4. Content ( The What)**

**(25 minutes)**

Before reading the story ask the students, “What do you know about fairy tale stories?” Show students a set of tangrams and ask them to identify each of the seven shapes. Show them the book cover and ask them if they recognize the tangram shapes as an animal.

Throughout the book, when a tangram picture appears, pause reading and ask the students to identify the animal or object that is created from the tangram shapes. Ask students to identify the smaller geometric shapes within the larger picture. After the reading, ask, “What does this story remind you of? How is this story different from The Three Little Pigs? What kind of animals or objects do you think you could make using the seven shapes?”

#### **5. Teaching/Learning Strategies ( The How)**

**(30 minutes)**

**Teacher Role**

##### **(i) Introduction of the Activity, Routines and Procedures**

**(20 minutes)**

Tell the students that with the person sitting next to them they will create a minimum of three animals or objects using a set of tangrams.

Model the instructions using chart paper

- 1) Decide which animal or object you would like to create (e.g. a girl)
- 2) Make a conceptual drawing of what your object might look like
- 3) Using the tangram shapes, place them together so that the creation is similar to the image that was drawn.
- 4) Using a pencil, trace the outline of the animal or object you have created

After explaining the instructions, remind the students that they should make several drawings using the tangrams. Inform students that they will be using their animals and objects to create a story during the Language Arts period.

Tell the students that you can provide outlines for them if they are having difficulty coming up with animals or objects and that you will be walking around the classroom to assist them.

Dismiss students to their desks for the activity. Handout tangram sets and paper.

##### **(ii) Lesson Conclusion**

**(10 minutes)**

Have students gather at the carpet area with their final drawings. Students will present their best work to the class and describe the shapes they used and how they organized them to make their drawings.

#### **6. Assessment (Collection of Data) / Evaluation (Interpretation of Data)**

While students are presenting, a checklist will be used to assess their work. The checklist will evaluate the student’s ability to compose pictures by combining two dimensional shapes (the tangrams) and describe the process to the class. (see attached).

