Unit Introduction Lesson

Imi and Zani

Amazon Birds Consulting

SAMPLE

Meet Imi and Zani, the Game Creators

In Brief

This lesson introduces students to **I**sabella, the **M**athematical **I**nventor (a.k.a., "Imi"), and her sidekick, Zani, who are characters that work for *Amazon Birds Consulting (A.B.C.) Company*. Students learn that they will work throughout the unit with Imi and Zani to help them fine-tune geometry shape games. The primary purpose of this lesson is to introduce students to speaker and listener roles that will establish a productive math learning community and help them begin to understand what it means to communicate mathematically. Students also do an activity and play a Bingo-like game to discover the defining characteristics of triangles, quadrilaterals, pentagons, and hexagons.

Mathematical Focus

Students discover that the number of sides (rather than the length of the sides, the angle measures, or orientation) defines a polygon. In addition to the geometry content, students infer and begin to practice specific speaker and listener roles to support their mathematical investigations.

Objectives

- Students will understand that polygons are defined by their characteristics.
- Students will define triangles, quadrilaterals, pentagons, and hexagons according to the number of sides and vertices.
- Students will determine that a polygon's orientation and the length of its sides do not change the name of the shape.
- Students will learn about and use their roles as speakers in their math learning community.
- Students will learn about and use their roles as listeners in their math learning community.
- Students will begin to think like mathematicians as they listen and speak about math.

Mathematical Language

Teacher Tip

* Words and pictures are included on the word wall. Definitions are for teacher reference.

This lesson introduces the names of some polygons and some attributes (i.e., side and vertex). Note that students may understand the concept behind some of these terms without knowing the language used to describe the idea. Conversely, students may be familiar with a term like "triangle" but may not have a complete understanding of it. Individual students will master the mathematical language in this and other lessons at their own pace. Encourage the acquisition of language by presenting students with terms as they begin to develop a conceptual understanding of concepts; then reinforce the proper terminology thereafter.
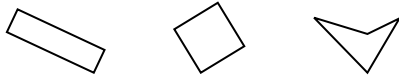
- ***Hexagon** – a polygon with six sides
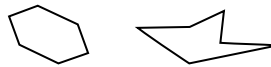
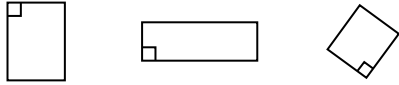- ***Pentagon** – a polygon with five sides

- **Polygon** – a closed plane figure with three or more sides that is made up of line segments that do not cross
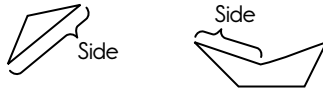
- ***Quadrilateral** – a polygon with four sides

- ***Rectangle** – a quadrilateral with four right angles

- ***Side** – each of the line segments that make up a polygon; this is a term used only with 2-dimensional shapes

- ***Square** – rectangle with sides equal in length

- ***Triangle** – a polygon with three sides

- ***Vertex (*plural* Vertices)** – the point(s) where two sides of a shape meet

Materials

Students

- "What's the Same About These Shapes?" (Student Mathematician's Journal pp. 5–11)

- "Zani Lingo Cards" (one card per student that has been copied on card stock and cut out) (p. 69)

- "Think Deeply" (Student Mathematician's Journal p. 13)

Teacher

- "Dear Student Mathematicians" letter (Use the first letter if this is your first Grade 1 unit with Imi and Zani or the second letter if your class already met them in *The School Measurement Fair: Measuring with Imi and Zani*.) (pp. 61–62)

- "Math In Our Mundo" scrapbook

- Speakers' scroll (Student Mathematician's Journal p. 1)
- Listeners' scroll (Student Mathematician's Journal p. 2)
- "What's the Same About These Shapes?" (overhead transparency or projected on the interactive white board [IWB]) (Student Mathematician's Journal pp. 5–11)
- Word wall cards (including the names and separate cards with examples) for triangle, quadrilateral, pentagon, and hexagon
- "Zani Lingo Rules!" (p. 67)
- "Zani Lingo Cards" (one overhead transparency or projected on the IWB) (p. 68)
- "Think Deeply" (overhead transparency or projected on the IWB) (Student Mathematician's Journal p. 13)
- Talk Move signs printed on card stock and mounted on craft sticks (pp. 69–70)

Supplies

- A sealed box — prepared ahead of time — that is addressed to the class, has a return address (Imi and Zani; *Amazon Birds Consulting*; 14 Avenida Palomita; Amazon Rainforest, Peru; South America), includes postage (does not have to be real), and contains the following:

  - "Dear Student Mathematicians" letter folded and inserted into an envelope addressed to the class (e.g., "Ms. Diaz's Class")
  - "Math In Our Mundo" scrapbook
  - Speakers' scroll
  - Listeners' scroll
  - "What's the Same About These Shapes?" (overhead transparency or projected on the IWB and one per student)
  - "Zani Lingo Rules!" (one copy for teacher reference)
  - "Zani Lingo Cards" (one overhead transparency or projected on the IWB and one card per student that has been copied on card stock)
  - Transparent chips (12 per student)
  - Number cube (one per pair)
  - "Think Deeply" (overhead transparency or projected on the IWB and one per student)

- Tape or thumb tacks to post speakers' and listeners' scrolls at a place near the class meeting area
- Blank piece of card stock or paper

- Talk Frame
- Sample scrapbook (optional)
- Colored pencils, thin markers, or overhead markers to color-code each side of the polygons on "What's the Same About These Shapes?" and/or Think Deeply responses (optional)

Lesson Development
Part 1. Meet Imi and Zani
Setting: Whole class, seated on the rug or other class meeting area
Pacing Guide: 60 minutes

1. ***Open the package that Imi and Zani "sent" to the class.***
   Share with the class that they received a package all the way from South America. (Students already may have received one if they completed *The School Measurement Fair: Measuring with Imi and Zani*). How exciting! Show them the addresses on the box, then open it and show them what is inside: a letter, a scrapbook, two scrolls, a set of cards, a stack of papers, and some materials.

   Students will meet Profesora **I**sabella, the **M**athematical **I**nventor ("Imi" for short), and Zani who are writing to ask the class to help test math games for kids around the globe. Students will correspond with them throughout the unit by way of the Think Deeply questions. Imi (pronounced "ĭmēē") and/or Zani (pronounced "Zānēē") also will send a memo at the beginning of each lesson to correspond about the investigations.

2. ***Open the envelope, and read the entire letter.***
   Read the first letter if students have yet to meet Imi and Zani; read the second if they met the characters when they studied measurement. In each letter, Imi and Zani introduce themselves and then explain that the class needs to read over the scrolls that describe the speaker and listener roles students will be expected to take on. Find evidence of the roles in the scrapbook, then practice the roles as students complete an activity and play a game. You may want to show students an authentic scrapbook if they are unfamiliar with its format. Explain that a scrapbook is unlike a storybook because the pictures and captions represent different events rather than telling a continuous story.

3. ***Read over and have students model the speaker roles.***
   Post the speakers' scroll in a prominent location. Read each role and have students briefly discuss how it would support everyone's learning. Have them demonstrate behaviors that would and would not follow these roles. Ask:

THINK DEEPLY

Throughout the lesson use the "What to Look for in Responses" and "Possible Difficulties" to help focus discussions.

Teacher Tip

Have students learn about macaws, toucans, and/or South America, possibly during center time.

- *What might we hear you say if you are behaving like Imi and Zani's math learning community?*

- *What would you not be doing?*

Here are some guidelines:

Speakers' Roles	Rationale	Observable Behaviors
1. Talk loudly.	Everyone's ideas are important to all of us.	Speakers talk so others across the room can hear them.
2. Turn to the class.	We get to talk as a class, not just as a teacher and one student.	Speakers turn their chairs towards the class; they hold a "microphone" to show it is their turn to speak.
3. Share and explain our ideas.	Students' reasoning is valued, not just answers, and there are different ways to justify ideas.	Speakers use words, drawings, objects, numbers, gestures, etc. to explain their ideas.
4. Agree and disagree with ideas, not each other.	Ideas need to be mathematically valid ones, and these can come from anybody.	Speakers say, "I agree with Janine's idea," or "I disagree with Michael's reasons."

4. Read over and have students model the listener roles.
Post the listener scroll. Again, read each role, have students offer why they might be listed, and encourage them to act out some of the behaviors that would show and contradict some of the roles. Provide examples as needed. Some ideas are listed.

Listeners' roles	Rationale	Observable Behaviors
1. Ask speakers to speak up.	Students and teachers need to be responsible for making sure they can hear everyone's contributions.	Listeners ask, "Can you please say that again a little louder?" Teachers have students speak up rather than speaking up for them.
2. Show speakers we are listening.	Speakers should be treated with respect.	Listeners turn their bodies toward and look at the speaker, wait to raise their hands until the speaker is done sharing, and keep their hands still while listening.
3. Ask questions to understand an idea.	Speakers need support in making their ideas clear. Students and teachers have different perspectives.	Listeners ask, "Do you mean that _____?"

5. Look over the scrapbook to identify helpful speaker and listener roles.
Encourage students to study both the drawings and captions to determine how Imi, Zani, and their friends help one another learn math. Rather than raising hands, have them cup their hand next to an ear if they want to share a listener role; have them point to their mouth if they want to share a speaker role.
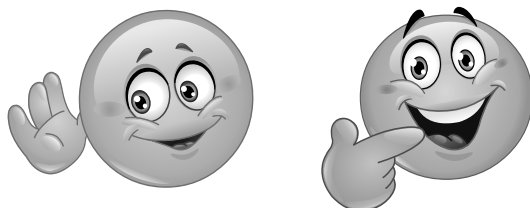
Partner Talk

This is an opportune time to use partner talk. All students get to participate, and you can call on one or two students to share with the class and be efficient with your time. Regularly refer back to the speakers' and listeners' scrolls for students to continue to develop their understanding of what will be expected of them in math class. It is okay if students focus on particular roles and do not address all of them. If this is the case, simply review the ones they overlooked now or during the next two activities.

Repeat and Check

6. Review and/or introduce math terms.
Use the *Repeat and Check* talk move to focus on terminology. Hold up a rectangle and move your finger across an entire side (from vertex to vertex) of the rectangle. Ask students what this part of a shape is called. Emphasize that mathematicians call this part of a shape a "side." Have students do the same with the edges of their desks or edge of a textbook. Repeat this modeling with what students may call a "corner" or "point." Mathematicians use the term "vertex" (and its plural, "vertices") when students mention this characteristic. Note that defining a polygon solely by the number of its sides is a sufficient definition at this time.

7. Have partners discuss "What's the Same About These Shapes?"
Remind students that they will be helping Imi and Zani with a game. Before they play, students first need to study the groups of polygons on "What's the Same About These Shapes?" to get ready to play the game. Have students talk with partners, and listen in to their conversations so you can purposefully call on certain ones (including those who do and do not have the correct answers) to help guide the discussion.
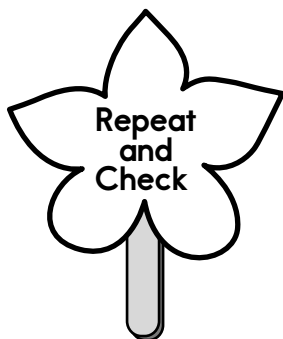
8. Discuss "What's the Same About These Shapes?" as a class to role-play the speaker and listener roles.
Students should discover that the number of sides defines polygons rather than the rotation, length of sides, and/or size

Student Mathematician: _____ Date: _____
Student Mathematician: _____ Date: _____
Student Mathematician: _____ Date: _____
Student Mathematician: _____ Date: _____
What's the Same About These Shapes?

All triangles have _____

Project M³: Exploring Shape Games   5   Unit Introduction Lesson
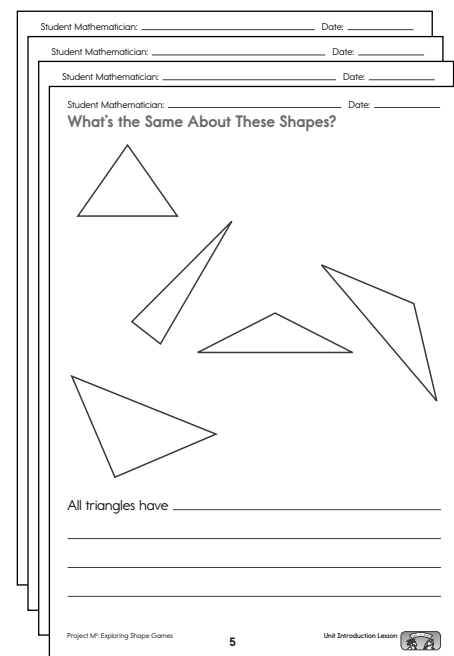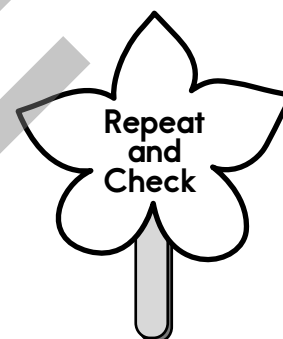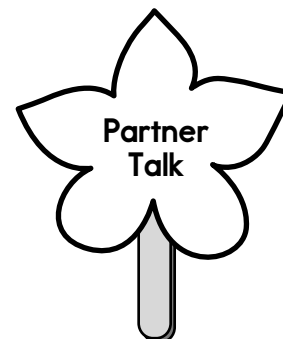
Student Mathematician's Journal pp. 5–11

Repeat and Check

of angles. This is an opportune time to use the *Repeat and Check* talk move to emphasize these ideas.

You may want students to trace each side of each polygon using a different color pencil or marker to keep track of the number of sides, or you might prefer to do this on the transparency or IWB. For this class discussion, **point out the positive speaker and listener roles students take on during or at the end of the discussion**. For each polygon, ask:

- *What do you notice is true about all the shapes in this group?* (Students should realize that each polygon has the same number of sides. Some also may note they have the same number of vertices or "corners.")

- *Is that true for all the shapes in the group? Do you agree or disagree with that idea? Why?*

Encourage students to realize that the rotation and length of sides do <u>not</u> define shapes by asking probing questions like:

- *That triangle (and other shapes) is turned. Do you think it still is a triangle?*

- *The sides of the shape seem to be too long (or short). Do you think it still is a triangle (and other shapes)?*

- *The sides of the shape are all different lengths. Is it still a triangle (and other shapes)?*

Agree/ Disagree and Why
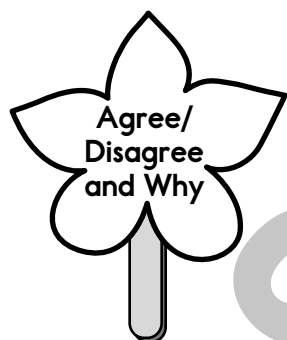
Use the *Agree/Disagree and Why* talk move to guide the discussion so students realize that the answer to all of these questions is "yes." Mention that Imi and Zani said that all of these are, for example, triangles, so it does not matter that one is turned or that the sides are different lengths. It is still has three sides like the other shapes pictured.

9. **Have students summarize the discussion by completing "What's the Same About These Shapes?"**
Have students record responses that summarize the number of sides common to each shape. They should then add an additional shape to each box that looks different from the other ones that are pictured.

10. **Close the lesson by previewing the game Zani Lingo and showing students a game board.**
Point out to students that the shapes pictured on "What's the Same About These Shapes?" are just some examples of triangles, quadrilaterals, pentagons, and hexagons. They will get to work with these groups of shapes when they play Zani Lingo.

Part 2. Investigating Polygons and Playing Zani Lingo

Setting: Whole class, then pairs

Pacing Guide: 60 minutes

. . . .

1. Have students match terms with examples to review the defining characteristics of polygons.

Use the word wall cards for triangles, quadrilaterals, pentagons, and hexagons to have students match the vocabulary cards with the example cards. One option is to post these on the board and number the examples. Students then would say, for example, "There are triangles on Card 3."
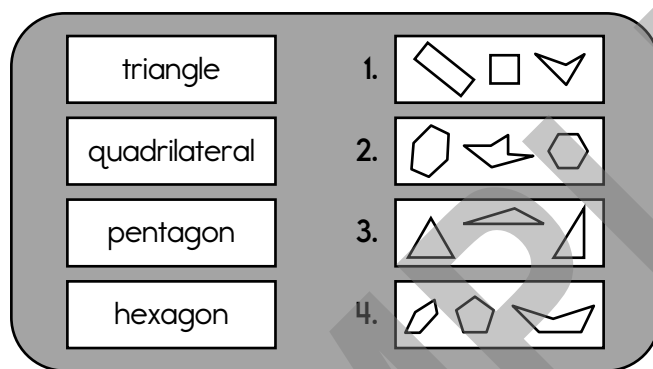
> ### Teacher Tip
>
> At this point, it is not necessary for students to have mastered the shape names. The goal here is to encourage students to look at the shape's attributes.

2. Explain the rules for Zani Lingo.

This game is similar to regular Bingo. Pairs will play against one another to be the first to get four chips in a row. Show students how they can win by having four chips line up "in a row" either across (horizontally) or up and down (vertically). Students should check one another's moves because if they discover a misplaced chip, that player loses that chip from their game board. Students should call out "Zani Lingo!" when they get four in a row.

3. Model the game, and play as a class.

Display the Zani Lingo Card on the overhead or IWB. Have students take turns rolling the number cube and announcing the number. Each student places a chip in an appropriate location (e.g., on a hexagon after rolling a 6). Ask students which spaces they could place a chip. Encourage students to count the number of sides on the shapes. You may have them refer to the word wall, the "What's the Same About These Shapes?" worksheets, or again trace each side with a different color if they are having trouble. Show the different options on the overhead transparency or IWB. This will help students realize that there are different places they can place their chips! **Note: Students cannot mark a shape if they roll a 1 or 2. They can say, "Oh! No such shape!"** Play the game

Teacher Guide p. 67

as a class a few times. As students begin to understand the rules, allow pairs to begin playing independently while you continue to work with the rest of the class. Encourage students to say the name of the shape as they place their clip down on the shape.

4. *Have pairs play Zani Lingo.*
   Once all students are playing in pairs, informally assess student understanding of polygons by listening to their conversations. Have them discuss the strategies they used to get four chips in a row before playing the game again (time permitting).

Part 3. Model Good Math Writing

Setting: Whole class writes together
Pacing Guide: 60 minutes

There are three purposes to this activity. First, you will have the opportunity to further discuss two shape attributes, sides and vertices. Second, students can explain their strategies for the game. Third, students will be informally introduced to sound mathematical writing.

1. *Discuss what the Think Deeply question is asking.*
   It is important for students to make sure they understand the question that is being asked before trying to write a response. One strategy is for students to rephrase the question in their own words. Post the Think Deeply question transparency or IWB, and read it aloud. Have students rephrase the question in their own words (i.e., what they think Zani wants to know). Record this on the talk frame.

Mathematical Focus: Definition of a Quadrilateral

THINK DEEPLY

I want to win my Lingo game! I rolled a 4. Write an X to show me where to put my next chip. Why should I put it there?

What to Look for in Responses

- Students mark one of the two quadrilaterals that would give Zani four in a row.

- Some students may note that there is more than one correct placement that would help Zani win.

- Students explain that the shape has four sides, so it is a quadrilateral.

- Students should tell how the placement of the chip would give Zani four chips in a row.

Student Mathematician's Journal p. 13

Possible Difficulties

- Students may place the chip on a quadrilateral, but it does not give Zani four chips in a row.

- Students may place the chip on a shape that gives Zani four chips in a row, but the shape is not a quadrilateral. Ask students to explain themselves to determine whether or not they understand all quadrilaterals have four sides.

- Students may have difficulty describing that Zani can place a chip on the shape because it is a quadrilateral.

2. Use the talk frame to paraphrase student ideas about possible answers for the Think Deeply question.
Discussing the Think Deeply question as a class helps students focus on the thinking involved in answering these types of questions. The primary goal is to help students learn how to justify their ideas. The class discussion also helps students organize their thoughts before they write their own responses.

Think

Zani rolled a 4. Where should he put his next chip?
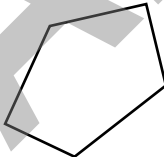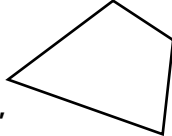
Talk Idea

- **Bottom left corner**
- **Makes four in a row**
- **Has five sides**

Talk Idea

- **It makes four in a row**
- **Has four sides (quadrilateral)**
- **Does not look like a rectangle, but does not have to**

We Understand

- **Two four-sided shape (quadrilateral) choices**
- **Gives you four chips in a row**

The discussion gives students a chance to use math language appropriately, and will serve as a basis for good math writing that will be discussed explicitly in the next lesson through writer roles. A sample discussion follows.

Think

Talk Idea

Teacher: So we are trying to help Zani win the game by deciding where to put the chip. Any ideas?

Silvia: Well, I think there. He should put it there. The corner is a good place.

Teacher: Silvia, can you show us where you mean? [Silvia places a chip on the pentagon on the bottom left.]

Teacher: Does someone agree or disagree with Silvia's idea?

Peter: I agree.

Teacher: Why?

Peter: Because it gives you four shapes in a row.

Teacher: Mateo, what do you think about what Silvia and Peter said?

Mateo: I think I agree and disagree. It does give you four in a row, but it does not have four sides.

Teacher: Jaline, can you repeat what Mateo just said?

Jaline: I think he said that does not work because it does not have four sides. Zani rolled a 4.

Teacher: Mateo, is that what you meant to say?

Mateo: Yes, kind of. I counted the sides. There are five sides not four.

Jackson: Yeah, we need to find another four-sided one.

Kenny: I think the shape at the other corner on the other side works.

Teacher: Kenny, can you show us which shape you mean?

Kenny: [Places chip on the quadrilateral on the bottom right corner.] I mean this one. See, it has four sides.

Teacher: So you think Zani should put the chip on this shape because it has four sides? Is that what you said?

Kenny: Yeah. He rolled a 4, so we hafta have a four-sided shape.

Teacher: Angel, do you agree or disagree with Kenny's idea?

Talk Idea

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Angel: Um, I'm not sure because it does not look like a rectangle.

Teacher: So let's talk to your neighbor about that idea. Do you think all four-sided shapes have to look like rectangles? Be ready to explain your ideas with us.

The class continued their discussion and talked about how not all quadrilaterals have to look like a rectangle. The teacher used the word wall to encourage students' use of the term "quadrilateral" after they understood that it has four sides. They then realized that there was another quadrilateral where Zani could put his chip to win the game. They described how both of the shapes that would give him four in a row (the trapezoid and the rhombus) had four sides.

We Understand

3. *Model how to respond to the Think Deeply question.*

Explain to students that their response to Zani should help him make an informed decision about where to put his next chip. Talk out loud to model how to write a sound mathematical response. Students should help you complete the letter. As you record their ideas, make sure to share with students how you:

- Use words to share your ideas;
- Communicate your ideas in other ways, such as with a picture; and
- Defend your ideas by explaining why.

Record the letter on the transparency or IWB as students copy it on the Think Deeply in their Student Mathematician's Journal. Below are some ideas that students may share with the class.

> **Let's first use words to explain our ideas.**

Dear Zani,
　　Put your chip on <u>the quadrilateral marked with an X</u> because <u>the shape has four sides, and you will have four in a row.</u> Now you can win!

> **Let's mark the board with X's. Pictures can help us explain our ideas.**

> **It is important to explain <u>why</u>. That way Zani will make the best decision for himself.**

　　　　Your math friends,
　　　　<u>Ms. Diaz's class</u>

4. Close the lesson by summarizing the defining characteristics of polygons.

Review how students discovered that the shapes they studied are defined by the number of sides they have, and it does not matter how the shapes are "turned" or how long the sides are. Tell students you will memo Zani their Think Deeply responses so that he gets an idea about the strategies he could use to win his own game. You anticipate they will hear back from Imi and Zani soon!

Differentiating Instruction

Supporting Students

- Have students continue to work with the word wall and picture cards to reinforce the vocabulary.

- For drawing polygons on "What's the Same About These Shapes?" have students first record the vertices, then "connect the dots." Encourage students to spread the dots out rather than lining them up in a row.

- Have students outline the number of sides of the polygons using one color, then draw a dot using a different color on each vertex.

- For polygons that take longer to recognize, have students write the number of sides in the middle of the figure.

- Cut out several different polygons that students can match with the word wall cards.
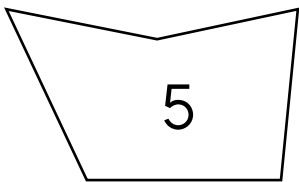
Challenging Students

- Let students get four in a row diagonally.

- Have students play the game at home (including extra game cards and directions), and have them explain the strategies they used to try to win the game.

- Encourage students to identify polygons in the real world.

5

Dear Student Mathematicians,

Our names are Isabella and Zani, and we live in the Amazon Rainforest in Peru, which is a country in South America. Isabella, the Mathematical Inventor, goes by "Imi" for short, and she is a macaw. Zani is a toucan. We both just LOVE math and want to keep learning more about it! We are game creators at *Amazon Birds Consulting*, or "A.B.C." We have heard that you are fantastic student mathematicians. We hope you can help us test some games we are creating for kids around the world!
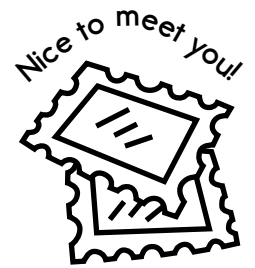
To be part of our team, we need you to set up your math learning community to be like ours. First talk about our speaker and listener roles. Then look over our scrapbook to see how we talk and listen to each other. You can practice talking and listening like us mathematicians as you work on a puzzle and then play a game. Zani needs your help, too, to try to win the game. We can't wait to hear your ideas!

Your mathematician amigos,

Imi and Zani

Dear Student Mathematicians,

¡Hola! It's Imi and Zani again. We both just LOVE math and want to keep learning more about it! We are lucky to have the best jobs! Remember how we are game creators at *Amazon Birds Consulting* or "A.B.C."? We already know you are fantastic student mathematicians. We hope this time around you can help us test some games we are creating for kids around the world.

To keep being part of our team, we need you to set up your math learning community to be like ours. First review our speaker and listener roles. Then look over our scrapbook to see how we talk and listen to each other. You can practice talking and listening like us mathematicians as you work on a puzzle and then play a game. Zani needs your help, too, to try to win the game. We can't wait to hear your ideas!

¡Hola again!

Your mathematician amigos,

Imi and Zani

PROJECT M²
Mentoring Young Mathematicians
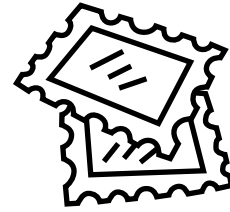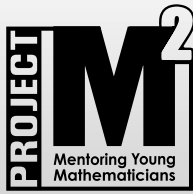
MENTORING *Young* MATHEMATICIANS
Level 1

Attribute Sorting
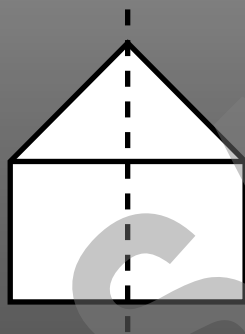
Symmetry
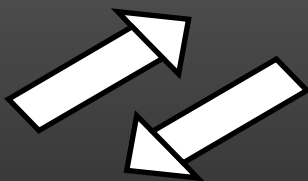
Congruent Shapes

Dear Families,

Welcome to *Exploring Shape Games: Geometry with Imi and Zani*. We are looking forward to exploring the different properties of shapes, the relationships among shapes, symmetry, and congruence in this hands-on math unit. Our focus will be on the creation of fun and interesting shape games, learning about spatial relationships along the way.

Imi and Zani, our bird friends from the Amazon Rainforest, will be contacting us via memo. Imi is a macaw and Zani is a toucan, and they are math consultants for the Amazon Birds Consulting (A.B.C.) Company. Students will be communicating with Imi and Zani throughout the unit to help them create new geometry shape games. Imi and Zani will also be helping students learn about the expectations of our math community, and how we can work together to investigate the world of mathematics. We are looking forward to exploring geometry with Imi and Zani, using their advice about how to listen, talk, and write about math ideas along the way.

During this unit students will begin to think like true mathematicians, becoming student mathematicians themselves in the process!

Sincerely,

Attribute Sorting

Symmetry

Congruent Shapes

Queridas familias,

Bienvenidos a *Los juegos de explorar las formas: La geometría con Imi y Zani.* Anticipamos explorar las propiedades diferentes de las formas, las relaciones entre las formas, la simetría, y la congruencia en esta unidad de actividades prácticas de las matemáticas. Nuestro enfoque estará en la creación de juegos divertidos e interesantes de las formas, y por el camino el aprender de las relaciones espaciales.

Imi y Zani, nuestros amigos aves de la selva Amazona de Suramérica, nos van a contactar a traves del memo. Imi es un pájaro guacamayo (macaw) y Zani es un pájaro tucán, y los dos son consulantes de matemáticas para la empresa A.B.C. ("Amazon Birds Consulting"- los aves del Amazon consultantes). Los estudiantes se comunicarán con Imi y Zani durante toda la unidad para ayudarles a crear las nuevas actividades de formas geométricas. Imi y Zani también ayudarán a los estudiantes sobre las expectativas de nuestra comunidad de las matemáticas y como podemos trabajar juntos para investigar el mundo de las matemáticas. Anticipamos con mucho gusto explorar el mundo de la geometría con Imi y a Zani, y usar sus consejos sobre como se escucha, se habla, y se escribe sobre las ideas de las matemáticas a lo largo de la lección.

¡Durante esta unidad los estudiantes comenzarán a pensar como verdaderos matemáticos y en el proceso ellos mismos se convertirán en matemáticos!

Sinceramente,

Math in Our Mundo
Scrapbook
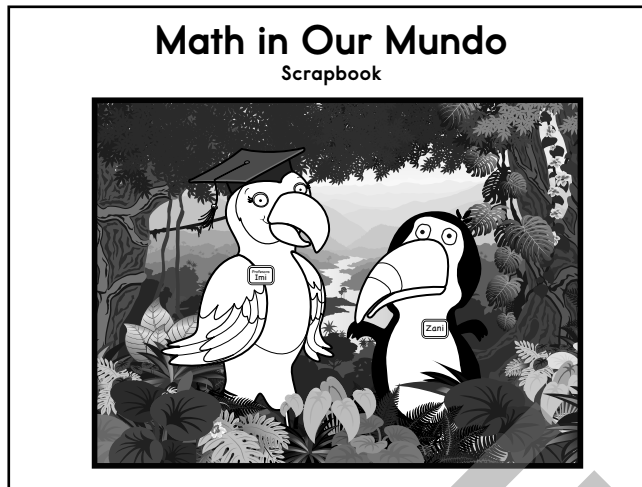
Here we are talking about a new game. We asked Marcos to repeat his idea.

How do you notice we work together as a team?
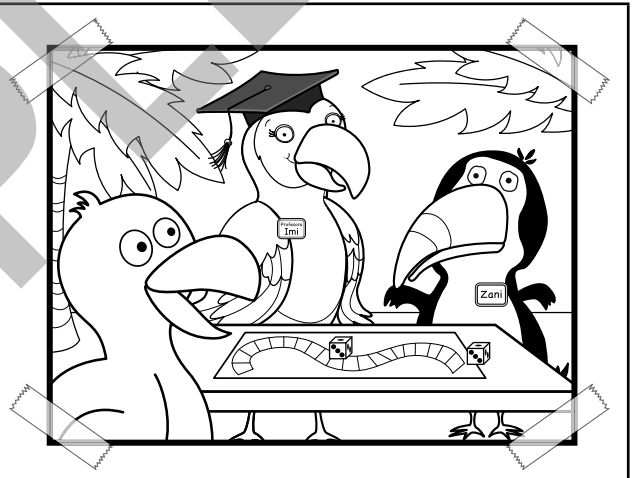
Here we are trying to figure out the rules for a card game. Anjelica shared a third idea and explained it.

How do you notice we share our ideas?
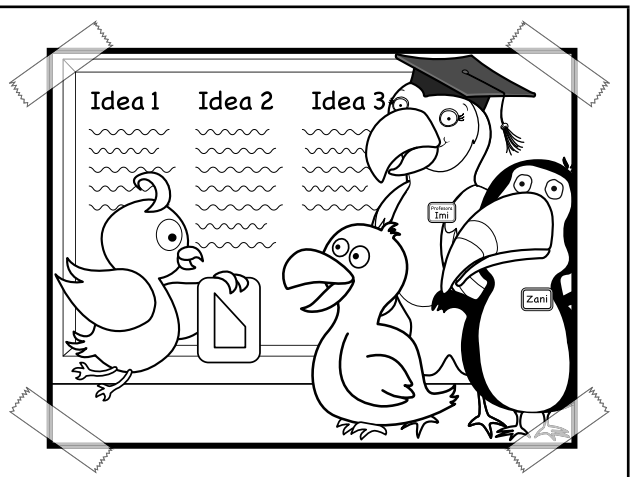
The workers in our game lab always have different ideas than we do!

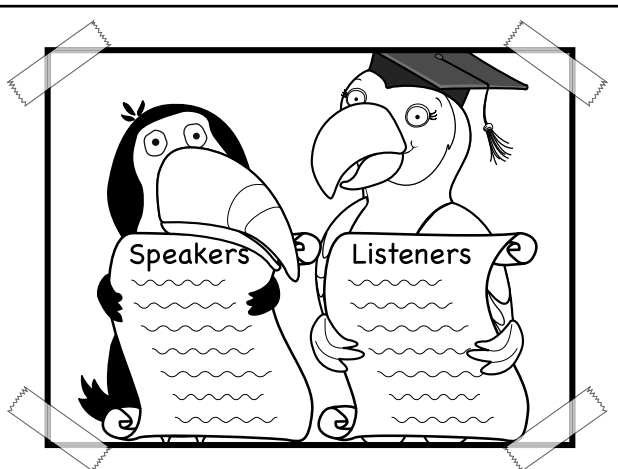How do you think we show one another we respect each other's ideas?
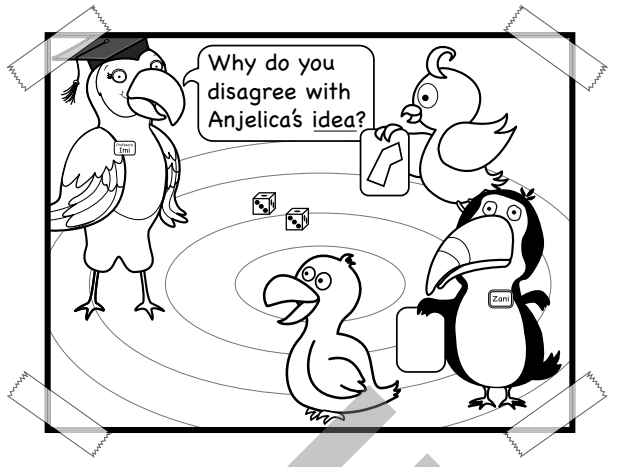
Miguel is quiet and shy. We asked him to talk louder.

How do you think we showed him that his ideas are important?
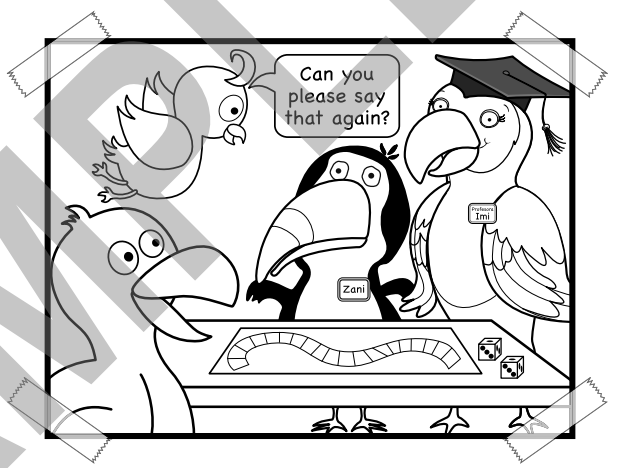
We love our speaker and listener roles because they help us learn more math!

Do you think you can talk and listen like us mathematicians?

Zani Lingo Rules!

Materials
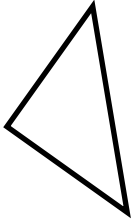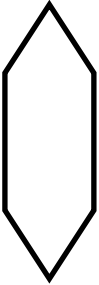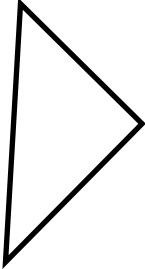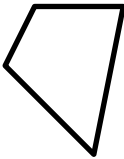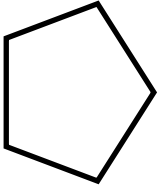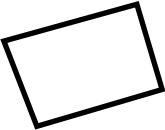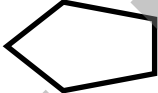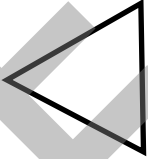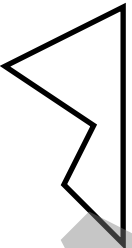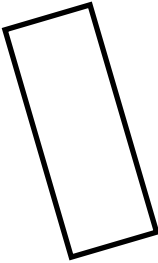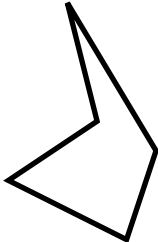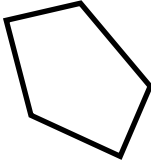
- Number cube (one per pair)
- Lingo Card (one per player)
- Chips (12 per player)
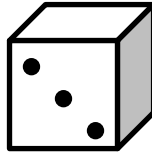
L	I	N	G	O

To Play

1. Roll the number cube.

2. Both players should place a chip on a shape on your Lingo Card that has the same number of sides as the number rolled. Remember,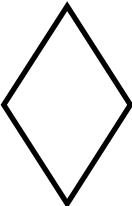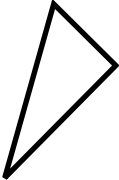 there is no such thing as a shape with 1 or 2 sides! Roll again if there is no shape with the number of sides shown on the number cube.

3. Players should check one another's game move. If a chip was misplaced, it should be taken away.

4. Repeat steps 1 and 2 until someone gets four chips in a row. The four chips can go across or up and down. Say, "Zani Lingo!"

5. Talk about the strategies used to get four chips in a row.

O	G	N	I	L

Project M²: Exploring Shape Games

Talk Moves Signs

Copy on card stock. Cut out.
Place on popsicle sticks to use
with the class.

Talk Moves

Repeat and Check

Think Time
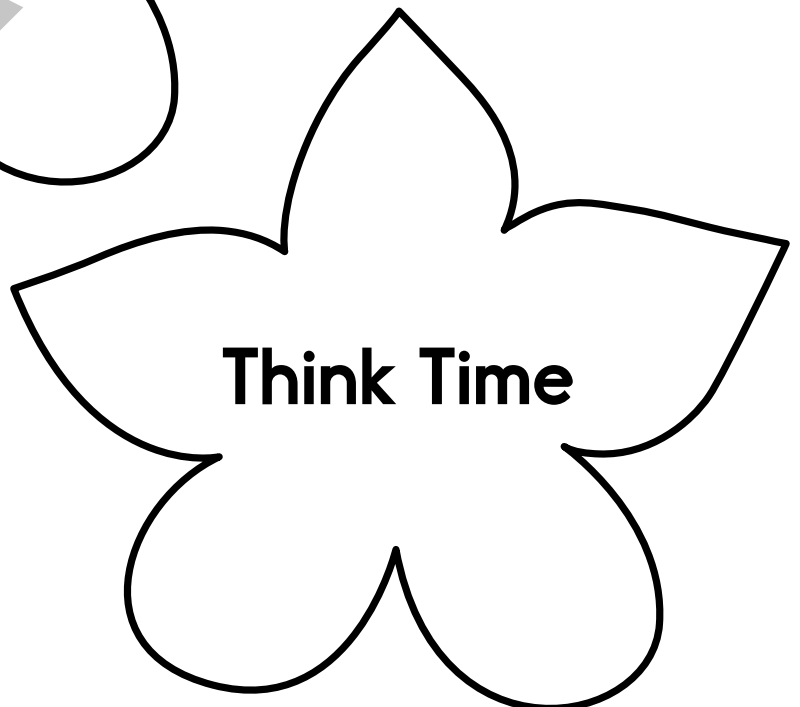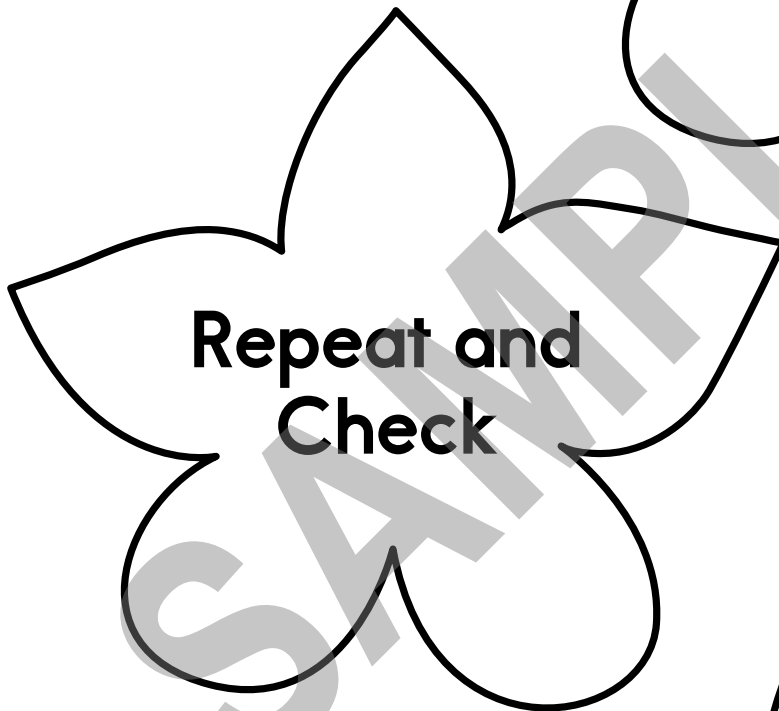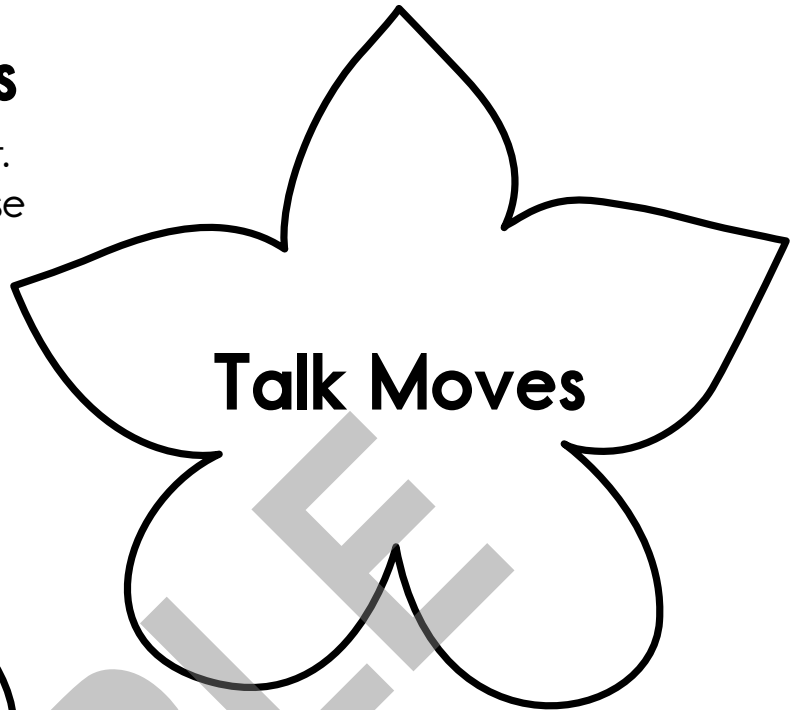
Partner
Talk

Agree/
Disagree
and Why

Add On

Project M²: Exploring Shape Games

A QUICK LOOK

(Note that for classes that have already met Imi and Zani and learned speaker/listener roles, less time may be spent on this lesson, but the class should still review roles. This lesson will introduce all students to geometry and help them understand that shapes that are polygons are defined by the number of sides.)

Unit Introduction Lesson

Part 1. Meet Imi and Zani

1. *Open the package that Imi and Zani "sent" to the class.*
   - Show students what is inside.

2. *Open the envelope and read the entire letter.*

3. *Read over and have students model the speaker roles.*
   - Post speakers' scroll, read, and discuss.
   - Roles are defined and explained on p. 52.
   - Have students demonstrate examples of the speaker roles.

4. *Read over and have students model the listener roles.*
   - Post listeners' scroll, read, and discuss.
   - Roles are defined and explained on p. 52.
   - Have students demonstrate examples of the listener roles.

5. *Look over the scrapbook to identify helpful speaker and listener roles.*
   - Encourage students to share ways they see Imi, Zani, and their friends help one another learn.
   - Share using cupped hand next to ear for listener roles or pointing to mouth for speaker roles.
   - Practice partner talk.

6. *Review and/or introduce math terms.*
   - Use *Repeat and Check* talk move.
   - Emphasize the terms "side," "vertex," and "vertices."

7. *Have partners discuss "What's the Same About These Shapes?"*
   - Have groups study the sets of polygons.
   - Use partner talk to engage students in discussion of what is the same for the sets of shapes.

8. *Discuss "What's the Same About These Shapes?" as a class to role-play speaker and listener roles.*

  - Through discussion, encourage students to realize that polygons are defined by the number of sides and not by rotation, length of sides, and/or size of angles.

  - See guiding questions on p. 54.

  - Point out positive use of speaker and listener roles where appropriate.

  - Use *Agree/Disagree and Why* talk move to have students discuss ideas about what is the same about each set of shapes.

9. *Have students summarize the discussion by completing "What's the Same About These Shapes?"*

10. *Close the lesson by previewing the game Zani Lingo and showing students a game board.*

  - Point out that the shapes in "What's the Same About These Shapes?" are just some examples and that they will work with these groups of shapes in Zani Lingo.

Part 2. Investigating Polygons and Playing Zani Lingo

1. *Have students match terms with examples to review the defining characteristics of polygons.*

  - Use word wall cards to review names and examples of polygons.

2. *Explain the rules for Zani Lingo.*

  - Show how students can win with four "in a row" across or up and down.

3. *Model the game and play as a class.*

  - Display the Zani Lingo Card on a transparency or IWB.

  - Roll number cube and have students place a chip in an appropriate place.

  - Ask students to share where the chip could be placed — help them realize there may be different places to put their chips!

  - If a 1 or 2 is rolled, say, "Oh! No such shape!"

4. Have pairs play Zani Lingo.

- Each pair needs a number cube.

- Encourage students to count the number of sides on the shapes and refer to the word wall.

Part 3. Model Good Math Writing

1. Discuss what the Think Deeply question is asking.

- Post the Think Deeply question on a transparency or IWB.

- Have students paraphrase the question in their own words and record this on the talk frame.

2. Use the talk frame to paraphrase student ideas about possible answers for the Think Deeply question.

- Facilitate a discussion about how students could answer the question.

- Record student ideas and the class conclusion on the talk frame.

3. Model how to respond to the Think Deeply question.

- Have students help you complete the letter on a transparency or IWB.

- Students will each compose the letter in their Student Mathematician's Journal.

4. Close the lesson by summarizing the defining characteristics of polygons.