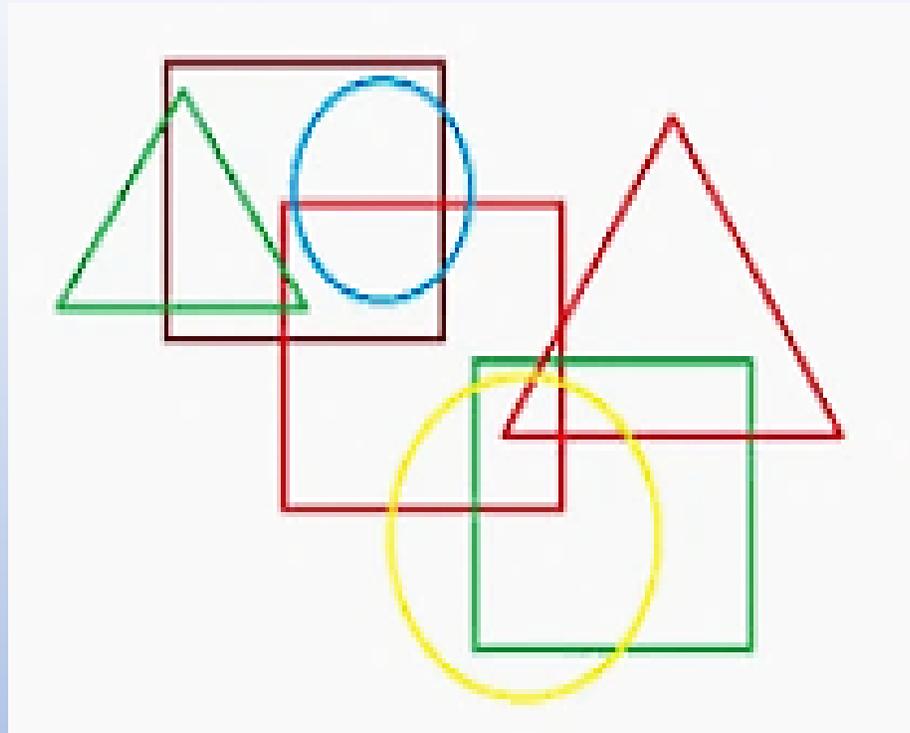


**WEST VIRGINIA
DEPARTMENT OF EDUCATION**



MATHEMATICS

GRADE K

Alike or Different Game

Table of Contents

Rationale for Lesson and Associated Tasks	Page 1
Lesson and Associated Tasks Overview	Page 1
West Virginia College-and Career-Readiness Standards	Page 2
Mathematical Habits of Mind (MHM)	Page 2
Mathematics Teaching Practices to Support Student Growth	Page 2
Essential Understandings	Page 2
Set-up Phase	Page 2
Establish Small Groups	Page 2
Develop Open Ended Questions	Pages 2 - 3
Gather Materials	Page 3
Anticipated Common Student Misconceptions	Page 3
Explore Phase	Page 3
Prior Instruction/Knowledge	Page 4
Implementation Phase	Pages 4 - 5
Share, Discuss and Analyze Phase	Page 6
Task in Action	Page 6



Task Title: Alike or Different Game

Grade or Content Area: Kindergarten

Toolkit Author: Brenda Buie, JoAnn Nuzum, and Kelcie Blankenship

Original Task Creator: Illustrative Mathematics

Quarter: 1

Rationale for Lesson and Associated Tasks

Students work with a set of sixteen picture cards with several two-dimensional shapes as they complete the “Alike or Different Game”. The set of cards consists of a variety of quadrilaterals, triangles, and pentagons, a hexagon, a circle, a semi-circle, and an oval. Students carefully look at one shape and compare or contrast it with one other shape. Working in pairs, the students take turns drawing a shape card from a pile of cards and then discuss the similarities and differences between the two shapes. As students discuss the attributes of the shapes, they support their thinking with evidence.

The “Alike or Different Game” task and associated activities provide students with the opportunity to describe shapes and expand their vocabulary to include geometric terms. As students work with the shapes and compare shape attributes, they develop a more precise understanding of each shape category and a deeper connection between the shapes and related vocabulary. As their understanding of the attributes of the two-dimensional shapes grows, Kindergarten students are better able to see that faces of three-dimensional shapes are comprised of these two-dimensional shapes. Students also see that these two-dimensional and three-dimensional shapes are found in the real world.

Lesson and Associated Tasks Overview

Illustrative Mathematics ([Click here](#))

(Review all components of the task thoroughly)

For Kindergarten students, this lesson and associated tasks may best be completed in a small group setting with the teacher asking questions designed to further develop students thinking and vocabulary and aid them in the life-skill of taking turns.

This lesson is designed to be completed in one mathematics class session.

Important Note: After the students are comfortable with the task, it can be set up as an independent discovery/learning station.

The Lesson

1. Introduce the “Alike or Different Game” to all students as a group.
2. Continue using the Think-Pair-Share format; choose two shapes and have the students share ways they are the same or different.
3. Model the small group activity using one student as your partner.
4. Have two students model the activity.
5. Allow students to work with partners on the “Alike or Different Game”.
6. Encourage students, in a whole group conversation, to share some observations that were made during their partner work.

West Virginia College-and Career-Readiness State Standard

*While the entire standard is listed below, the bold format identifies the portion of the standard that is a focus of the task.

M.K.20 Analyze and **compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/“corners”), and other attributes (e.g., having sides of equal length).** Instructional Note: Student focus should include real-world shapes.

Mathematical Habits of Mind (MHM)

*While the lesson addresses several MHM, the MHM in bold font is the focus of the lesson and associated tasks.

MHM3. Construct viable arguments and critique the reasoning of others.

MHM6. Attend to precision.

MHM7. Look for and make use of structure.

Mathematics Teaching Practices to Support Student Growth

- Implement tasks that promote reasoning and problem solving.
- Facilitate meaningful mathematical discourse.
- Elicit and use evidence of student thinking.

Essential Understandings

- Two-dimensional shapes may or may not share one or more mathematical attributes

Set-up Phase

1. Become an Expert Regarding All Lesson and Associated Task Content

It is essential that the teacher becomes very familiar with the shape cards associated with this task. The level of student engagement will be determined by how thoroughly the teacher promotes and extends observations. Be prepared to compare the attributes for each possible pair of cards.

2. Establish Small Groups

The “Alike or Different Game” promotes both individual and partner thinking. Students will make and share observations with both their partner and the teacher.

Skill level and personality should both be considered when developing the partners for this activity. The ability to think deeply, share ideas, and ask questions will prove helpful in the successful completion of the task. When creating the partners, it is important to eliminate a situation where one student may do all the observations and talking while the other only listens. For both students to benefit from the task, they must equally share the roles of observing and sharing. In the whole group introduction to this task, it will be important to carefully model taking turns as the game is played. Prepare responses and comments that students may use as they collaborate to find similarities and differences in the shapes.

3. Develop Open-Ended Questions

Teachers should create a list of open-ended questions designed to support and to scaffold the learning for their students. These questions should purposefully direct students toward the learning goals and assist them with using their previously learned content.

Some questions may include:

- What do you notice about the two shapes?
- How are the shapes similar? How are they different?
- What parts of the shapes can you compare?
- What would happen if you rotated or turned the shape?
- What was your thinking process?
- What additional information can you tell me?

4. Gather Materials

- Individual sets of shape cards. These should be on tagboard and/or laminated for durability. The set of sixteen cards consists of a variety of quadrilaterals, triangles, and pentagons, a hexagon, a circle, a semi-circle, and an oval. The cards can be found at: [Click here](#)
- A large set of shape cards for whole group discussion. (Optional – Shapes can be displayed on a Smart Board)
- Recording sheets, clipboards, pencils (Optional)
- Teacher observation form

5. Anticipated Common Student Misconceptions

- Students may not realize that triangles are still triangles even if they have different orientations or are different types (E.g., while students are not familiar with the vocabulary, the set of cards includes a right triangle, an equilateral triangle, and an isosceles triangle.)
- Students may not realize that the definition of rectangle does not include the lengths of the sides; any quadrilateral with four right angles is defined as a rectangle. Take care not to inadvertently promote the misunderstanding that a square is not a rectangle.

Explore Phase

Prior to the students working with partners, it is important that they understand the shape comparison task as well as the life skill of taking turns. The shapes and their attributes should be discussed in a whole group daily for several days prior to having students work independently with a partner.

1. During whole group time, the shapes can be projected on a whiteboard or displayed on large cards that every child can see. Begin by showing one shape and discussing the attributes. Depending on the attention span of students, the attributes of three or four shapes can be discussed each day. At least one day prior, and perhaps beginning two days prior, to the task, the teacher should consider showing two shapes and introducing the idea of looking for similarities and differences.
2. Each of the math centers/stations during this exploration phase should also allow for the students to spend time exploring attributes of shapes.
3. Suggestions for stations include, but are not limited to the following:
 - Building shapes with various materials such as pipe cleaners, craft sticks, clay, and yarn.
 - Drawing shapes using various writing implements on various types of paper including construction paper, wax paper, white paper, and graph paper.
 - Tracing shape templates to create a picture.

Prior Instruction/Knowledge

During Pre-K, students begin to correctly name shapes regardless of their orientation or size. They also begin to analyze and compare shapes describing the similarities and differences among them.

During Kindergarten, students describe similarities and differences of shapes using informal and then more formal language. Kindergarten students become less reliant on the teacher for prompting and support.

Please review the following: The information below provides valuable insights into Pre-K pre-requisite skills and Kindergarten student understandings specific to the analysis, comparison, creation, and composition of two-dimensional shapes.

Resource Booklet for Universal Pre-K (page 24, pdf 26): [Click here](#)

Educators Guide for Mathematics Grade K (page 30-32, pdf 32-34): [Click here](#)

Prerequisite Skills

- Identify, draw, and name basic shapes such as triangles, squares, rectangles, hexagons, and circles.

Supporting Skills

- Identify likenesses and differences between and among objects.
- Identify and name spheres and cubes.

Impending Skills

- Recognize the two-dimensional elements of three-dimensional figures.
- Use manipulatives, pictorial representations, and appropriate vocabulary (e.g., polygon, side, angle, vertex, diameter) to identify and compare properties of plane figures.

Source: *The Quantile Framework for Mathematics*

<https://metametricsinc.com/educators/quantile-for-educators/>

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Implementation Phase

1. Introduce the “Alike or Different Game” to all students as a group. Display each shape on a large card or a whiteboard and have all students discuss its attributes using a Think-Pair-Share format.
2. Continuing the Think-Pair-Share format, choose two shapes, and have the students share ways they are the same or different. Do this several times.
3. Model the small group activity using one student as your partner. Demonstrate how each person will choose a card from the pile, lay them side by side, and then take turns explaining a likeness or difference.
4. Have two students model the activity. Address any issues surrounding how to complete the task and how to work collaboratively with a partner.
5. Allow students to work with partners on the “Alike or Different Game”.
6. In a whole group conversation, encourage students to share some observations that were made during their partner work. Prepare a set of questions to prompt the classroom conversation. If these do not occur naturally in student conversations, consider:
 - Was there a pair of shapes that were difficult to compare?
 - Was there a pair of shapes that you were not able to find anything alike about?
 - Was there a pair of shapes that you were not able to find anything different about?

Teacher Notes:

Prior to the day of the task, review the attributes of the triangles, quadrilaterals, pentagons, hexagons, circles, ovals, and semi-circles several times.

With Kindergarten students, it is always wise to review content and model expectations prior to the actual task. Before assigning partners and allowing the students to begin the task, it will be important to spend some time as a whole group reviewing the attributes of a few of the shapes. Choices for this review should be based on observations from the responses given in the previous days. After a quick review of attributes, teachers may find it helpful to do a review of similarities and differences with the whole group.

When selecting the student's partner, the teacher will need to consider the student's skill at noticing attributes as well as the student's ability to verbalize his/her thoughts and reasoning (See #3). The same should be considered when choosing the two students who will model the task for the whole group (See #4).

Depending on the number of adults in the room, the teacher may wish to have all the students working on this task at the same time or may wish to have some at other math centers working independently while the teacher monitors two or three pairs of students. The number of pairs of students being monitored should be based on the amount of prompting and support they will require.

In order to minimize misconceptions based on orientation, have the students sit next to each other. This way they are both looking at the shapes with the same orientation.

During the task, the teacher should ask questions in order to deepen the student's understanding of shapes and their characteristics. It is important to create a list of higher-order questions (see notes in the Set-up Phase section of this guide). Targeted extensions to the conversation may include questions that ask students to compare two types of triangles or two types of rectangles. E.g., "Yes, they are both triangles (or rectangles), but how are they different?"

After the task is completed, return to a whole group setting. Allow students time to share the discoveries they made during the task. The student comments can be recorded on chart paper or a whiteboard. By recording the students' findings, the teacher validates the work they completed during the task.

Some students may wish to sketch the shape and record the number of sides/edges and corners/vertices. To allow for this option, create a recording sheet like the following:

Shape:		
Sides (or edges):		
Vertices (or corners):		

With this recording sheet, the students provide concrete evidence about the similarities and differences. The size of the recording sheet can consist of a whole or half sheet of paper depending on the size of the

clipboards available in the classroom. The sheet can also have spaces to record findings for multiple pairs of shapes.

When the students can articulate similarities and/or differences without teacher support, this task can be moved to an independent workstation. Using the recording sheet would add accountability to the task.

Other extensions of this task can include the following:

- Room walk: Using one shape as a guide, walk students around the room to identify real-world items of the same shape.
- Picture walk: Like a room walk, but students use magazines or books to find items of the same shape.
- Finding the 2-dimensional shapes that make a 3-dimensional shape (for instance a rectangular prism is made of rectangles)

Share, Discuss, and Analyze Phase

Essential Understanding: Two-dimensional shapes may or may not share one or more mathematical attributes.

Share: This lesson opens with the students reviewing the attributes of triangles, quadrilaterals, pentagons, hexagons, circles, ovals, and semi-circles in a whole group format. This format allows the teacher to monitor understanding as the students share their observations about the shapes.

Discuss: Working with a partner, students are to determine similarities and differences between two shapes. The teacher poses higher-order questions that will allow the students to think more deeply about how shapes may be different or alike. At this stage, it is critical that the teacher addresses any misconceptions, and, not to inadvertently promote misunderstandings.

Analyze: Students return to a whole group format to share the observations made during the small group task by responding to open-ended questions:

- Was there a pair of shapes that were difficult to compare?
- Was there a pair of shapes that you were not able to find anything alike about?
- Was there a pair of shapes that you were not able to find anything different about?

Task In Action

The video clips below provide a demonstration of the task being implemented in a classroom as it aligns with the Effective Mathematics Teaching Practice indicated. These clips should be used by the teacher to model the implementation of the task in his or her classroom.

- Implement tasks that promote reasoning and problem solving:
 - [Video Clip #1](#)
 - [Video Clip #2](#)
- Facilitate meaningful mathematical discourse:
 - [Video Clip #3](#)
- Elicit and use of evidence of student thinking:
 - [Video Clip #4](#)