



Sorting Grade K

Introduction

Noticing similarities and differences in shapes and designs is an important part of being mathematical. It is valuable for students to see that shapes and designs have many different characteristics and can be sorted in a variety of ways. In this task students are asked to describe why something is or is not a pattern and students have an opportunity to make up their own pattern. They then see if they can figure out what is missing from each other's pattern when part of it is covered. This task is great for language development, being descriptive, paying attention to detail and being specific. These are all mathematical skills that are valuable to develop. This activity is a series of sorting activities: sorting emoji, sorting shapes, and shape patterns. You can split it into a series of 2 or 3 days of lessons depending on the amount of time you have for math in your class.

Video

Strategies for Learning Mathematics, <https://youcubed.org/weeks/week-3-grade-K/>

Agenda for the activity

Activity	Time	Description	Materials
Mindset Message	5 min	Play the mindset video, <i>Strategies for Learning Mathematics</i> , https://youcubed.org/weeks/week-3-grade-K/	<ul style="list-style-type: none"> Mindset Video day 1, <i>Strategies for Learning Mathematics</i>
Emoji Sort		Introduce the emoji sort to students. <ul style="list-style-type: none"> Have students cut out the emoji. Working with a partner, have students find different ways to sort the emoji. (For example, emoji with eyebrows and emoji without eyebrows.) Have students decide which way of sorting they want to record on a piece of paper and have them glue down their emoji in the categories they decided on. Have students share with another pair or as a whole class and see if the rest of the class can figure out what categories they used for sorting the emoji. 	<ul style="list-style-type: none"> Emoji Handout (1 per pair) Blank white paper for gluing down their emoji Colored pencils/pens



Sorting Shapes	20 min	<p>Introduce sorting shapes to students.</p> <ul style="list-style-type: none"> • Show students the shapes. What do they notice about the shapes? What is the same and different about the shapes? • Give each pair of students a set of shapes and have them cut them out. Once they have cut them out ask students to sort them in different ways. • Invite students to share the different ways that students sorted the shapes. You may invite them to show one of the ways they sorted the shapes under the document camera. 	<ul style="list-style-type: none"> • Shapes Handout (1 per pair)
Shape Patterns	10 min	<p>Introduce shape patterns to the students.</p> <ul style="list-style-type: none"> • Let students know that you will be showing them a pattern of shapes. Ask students what a pattern is. What has to be true for something to make a pattern? • Show them pattern 1 on the board or under the document camera with the fourth, fifth, and sixth shapes covered. Have them talk to their partner about what the covered up objects will be and why. • Have pairs of students take their shapes and make their own pattern. How do they know it is a pattern? • Have them call you over to convince you that they have made a pattern with their shapes. Once they have shared their pattern with you have them glue them down on a sheet of paper. • Have pairs cover up a few of the shapes and see if their neighbor pair can figure out what the covered up shapes are and describe the pattern to each other. 	<ul style="list-style-type: none"> • Patterns Handout
Debrief Mindset Message	5 min	<p>Ask students to reflect on all the Strategies for Learning Mathematics from the video: 1) Draw it out, 2) Teamwork, 3) Experiment, 4) Look for different resources, 5) Start with a smaller case. Highlight some moments when you saw individuals and groups using these strategies or ask students to share when they used the strategy or saw someone else use the strategy.</p>	

Activity

This is a series of sorting activities. You may choose to split up these activities over multiple days depending on the time you have for your math lesson.



Emoji Sorting:

To introduce the activity, show the emoji and ask students what they notice about the emoji pictures. What is the same in some of the pictures and what is different? Give each pair of students a set of pre-cut emoji or you can ask them to cut them out. In pairs, invite students to choose how they would like to sort the emoji. For example, they could sort based on those that have glasses and those that do not. Encourage students to describe their categories in whatever way they can with enough specificity.

Once they have sorted in one way, have them find another way to sort. Can they come up with a way to sort that has three different categories rather than only two? After they have had a chance to sort the emoji in a few different ways, have students choose one of the ways they sorted the emoji and glue down the emoji on a paper with their categories. They can then swap with their neighbors and see if they can figure out what their neighbors' categories for sorting were. Which categories have they created that are the same? Which categories are different? As a class, share some of the different ways that students sorted the emoji.

Sorting Shapes and Shape Patterns:

This is a convenient spot to split this lesson over multiple days.

Show students the page of all of the shapes. Let students know that you will be showing them a pattern of shapes using each of the shapes on the activity sheet once. Ask students what a pattern is. What has to be true for something to make a pattern? Show them the examples included below of what would be a pattern and what would not be a pattern. Why is this a pattern? Why is this not a pattern?

Show them Pattern 1 with the fourth, fifth, and sixth shapes covered. Have them talk to their partner about what the covered up objects will be and why.

Have pairs of students take their shapes and make their own pattern. How do they know it is a pattern?

Have them call you over to convince you that they have made a pattern with their shapes. Once they have shared their pattern with you have them glue them down on a sheet of paper. Have pairs cover up a few of the shapes and see if their neighbor pair can figure out what the covered up shapes are and describe the pattern to each other.



Ask students to reflect on all the Strategies for Learning Mathematics from the video: 1) Draw it out, 2) Teamwork, 3) Experiment, 4) Look for different resources, 5) Start with a smaller case. Highlight some moments when you saw individuals and groups using these strategies or ask students to share when they used the strategy or saw someone else use the strategy.

Materials:

- Scissors
- Emoji Handout that students can cut out for sorting
- Blank paper for gluing down emoji
- Shapes Handout
- Pattern Handout

Adapted from nrich.maths.org

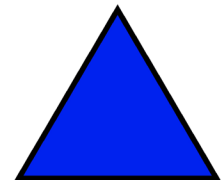
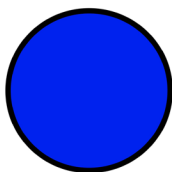
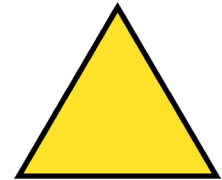
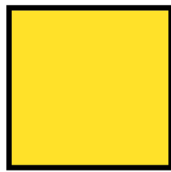
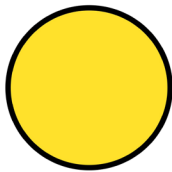
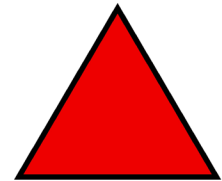
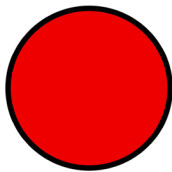
Here is a picture of nine emoji:

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Sorting Emoji Handout



Sorting Shapes Handout





Sorting Pattern Handout

Shape Patterns:

This is a pattern. What is the pattern?



This is not a pattern. Why not?



Pattern 1:



Create a pattern with the shapes here: