

Lesson Exemplar for Mathematics

Quarter 3

Lesson

8

Lesson Exemplar for Mathematics Grade 4
Quarter 3: Lesson 8 (Week 8)
SY 2024-2025

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MATHEMATICS/QUARTER 3/ GRADE 4

I. CURRICULUM CONTENT, STANDARDS, AND LESSON COMPETENCIES

A. Content Standards	The learners should have knowledge and understanding of symmetric figures with respect to a line, and resulting images after applying reflection with respect to a line.
B. Performance Standards	By the end of the quarter, the learners are able to: • identify symmetry with respect to a line, and create figures that have line symmetry. (MG) • perform reflection with respect to a line, including glide reflection, to obtain images of shapes. (MG)
C. Learning Competencies and Objectives	1. Identify symmetry with respect to a line. 2. Complete a figure that is symmetric with respect to a line. 3. Draw the image of an object after applying reflection with respect to a line, including glide reflection.
D. Content	Symmetry
E. Integration	Symmetry in Nature and Culture

II. LEARNING RESOURCES

Alexandra, E. (2016). Teach symmetry with backyard nature collage. Kid Minds. <https://kidminds.org/teach-symmetry-with-nature-collage/>

CueMath. (n.d.). Symmetry. CueMath. <https://www.cuemath.com/geometry/symmetry/>

Kazlacheva, Z. (2013). Bilateral symmetry in nature. Research Gate. https://www.researchgate.net/figure/Bilateral-symmetry-in-nature-4_fig1_237838275

Lisa. (2015). Bilateral symmetry in nature. The Smart Happy Project. <https://thesmarthappyproject.com/bilateral-symmetry-in-nature/>

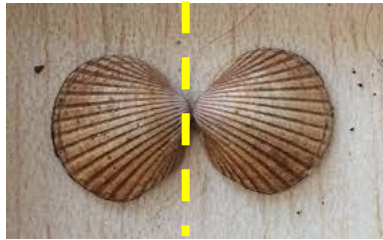
Mark Ryan. (2016). How Glides Reflections Work. The Dummies. <https://www.dummies.com/article/academics-the-arts/math/geometry/glide-reflections-work-230054/>

MiCath TV. (2021). Symmetry Song | Educational Tagalog Videos | MiCath TV. Youtube. https://www.youtube.com/watch?v=YMFusUVk_n8

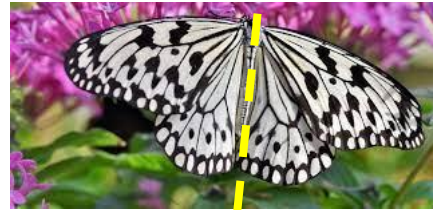
Nicky. (2013). Symmetry in nature. WordPress. <https://blogs.baruch.cuny.edu/symmetries/2013/05/24/symmetry-in-nature-2/>

University of Oxford. (2022). Nature prefers symmetry and simplicity. University of Oxford. <https://www.ox.ac.uk/news/2022-03-31-nature-prefers-symmetry-and-simplicity>

III. TEACHING AND LEARNING PROCEDURE	NOTES TO TEACHERS
A. Activating Prior Knowledge DAY 1 1. Short Review Activity 1. Wonders of Nature <i>Sample Activity</i> Instructions. Let learners share their thoughts on the pictures below. Ask the question “What do you see?” Sample Pictures.  (a)  (b)  (c)  (d)  (e) After learners were able to share their thoughts, share again the pictures but this time with an additional line. Ask them again, “What now do you see? What does nature tell us?”	Activity 1 is intended to identify and visualize symmetry in the environment or nature. In this way, you are leveling up the productive disposition of learners toward math by relating math concepts to nature or the environment.



(a)



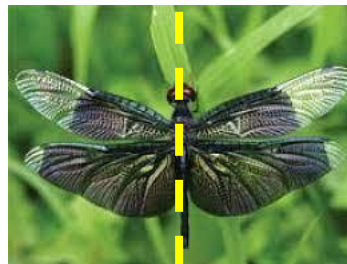
(b)



(c)



(d)

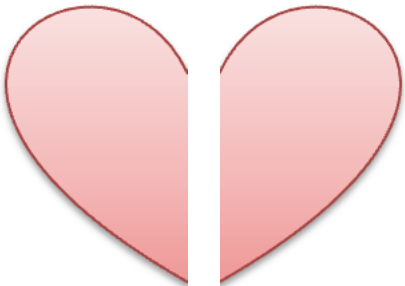
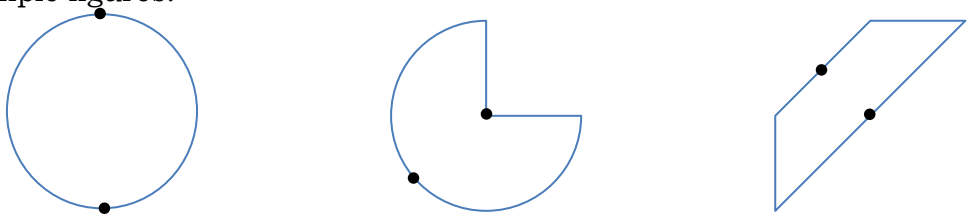


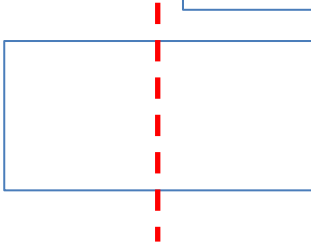
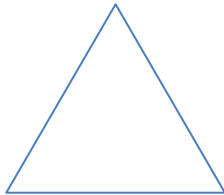
(e)

Activity 2. **Find My Other Half!**

Sample Activity (Pair Activity)

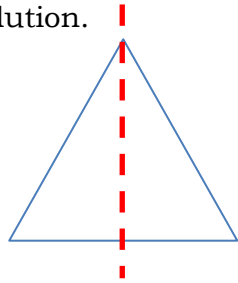
Instructions. Give learners cut-outs that are in halves. Each learner gets their half. Introduce a song while learners find their other half. Let learners sing while doing the activity. Let them stay with their pairs.

	Sample figures.  Guide Questions: 1. How did you find the activity? 2. How did you find your other half? Explain. 2. Feedback (Optional)	Activity 2 draws learners' attention to reflecting images or figures (or identical figures). Let them explain how they were able to find their other half by engaging in mathematical communication with their peers and their teacher. When learners explain their answers in Activity 2, keep them engaged in mathematical communication by ensuring that they use appropriate mathematical language.
B. Establishing Lesson Purpose	1. Lesson Purpose DAY 1 Activity 3. Connect the Dots <i>Sample Activity (Individual)</i> Material: Straightedge or Ruler Instructions. Connect the points using a straight line. Use your ruler. Sample figures.  Guide Questions: 1. After connecting the points and drawing the line, what do you notice with the figures? 2. Suppose I cut the figure along the line we have drawn, what will happen? Explain.	Activity 3 is intended to let learners identify and draw the line of symmetry in each symmetrical figure. Important Note. Draw learners' attention to the line of symmetry. Do not introduce yet symmetry or line of symmetry. Let learners infer that when the line of symmetry is drawn in a symmetrical figure, two identical figures (symmetrical) are formed. They can also say that the figure is divided into halves.

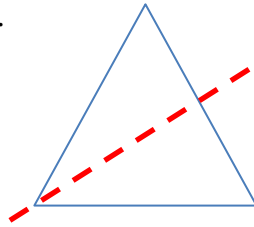
	2. Unlocking Content Area Vocabulary After learners were given ample time to do Activities 1-3, introduce the following mathematics concepts: Symmetry means that when figures are divided in half, one shape is identical to the other shape, that is, a mirror image of the other. If a figure does not have symmetry, we say that the figure is asymmetrical. - A symmetrical figure is a figure that can be divided into two identical figures that exactly match. - A line of symmetry is a line that divides a symmetrical figure into two identical figures.	
C. Developing and Deepening Understanding	DAY 2-3 SUB-TOPIC: Symmetry 1. Explicitation After doing Activities 1 to 3, let learners further build on the concepts of symmetry, symmetrical figures, and lines of symmetry. Some symmetrical figures do not only have 1 line of symmetry. They can have more than one line of symmetry. 2. Worked Example Example 1. Draw the line of symmetry on the figure at the right. Solution. a.  b.   Example 2. How many lines of symmetry can you draw on the figure at the right?	Note. Example 1 shows that the line of symmetry can be 2 (a vertical or horizontal line of symmetry). Example 2 is a good example to show different lines of symmetry in one symmetrical figure.

Solution.

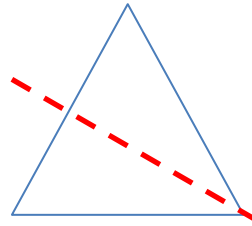
a.



b.

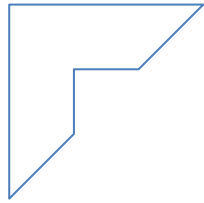


c.



Example 3. Which of the following figures shows symmetry?

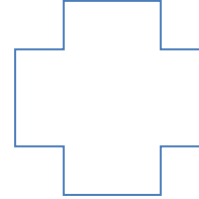
a.



b.



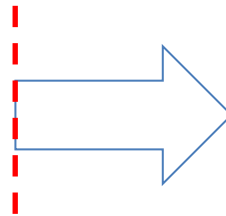
c.



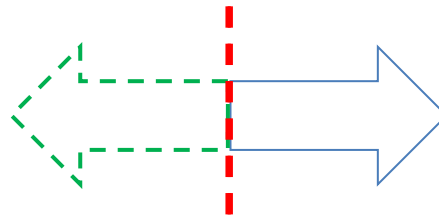
Solution.

The symmetrical figures are (a) and (c) while (b) is asymmetrical.

Example 4. Draw the other half of the figure with respect to the line of symmetry.



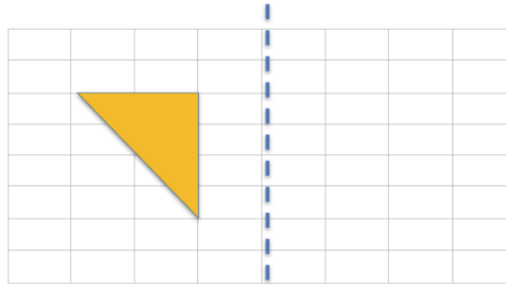
Solution.



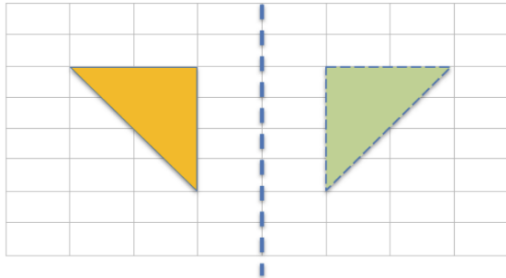
Example 3 is intended to draw learners' attention to asymmetrical figures and to activate visualization (1st level of geometric thinking according to the van Hiele Model of Geometric thinking).

Example 4 is intended to let learners complete a figure that is symmetric with respect to a line.

Example 5. Draw the mirror image with respect to the line of symmetry.



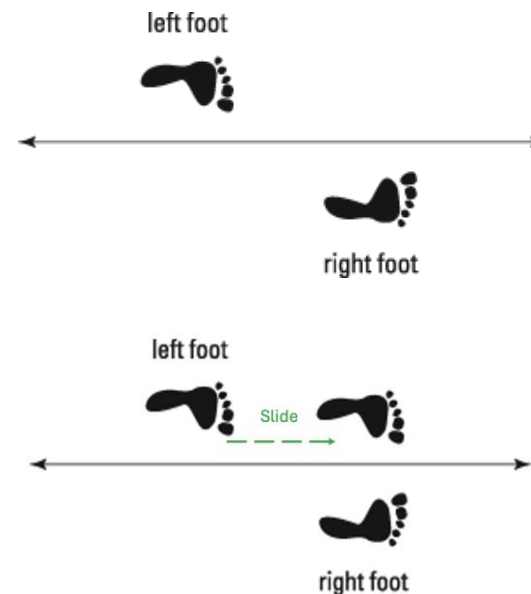
Solution:



Example 6. (Glide Reflection).

Explicit Discussion

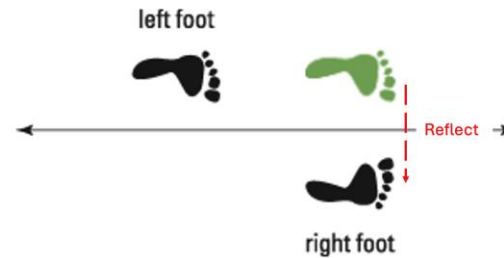
Step 1. Move the object by sliding.



Example 5 is intended to let learners draw the image of an object after applying reflection with respect to a line (or the line of symmetry).

Example 6 is intended for learners to appreciate glide reflection. For learners to conceptually understand glide reflection, teach the basic concept of “slide/glide then reflect” through visual demonstration.

Step 2. After sliding, draw the mirror image (reflection) with respect to the line of symmetry.



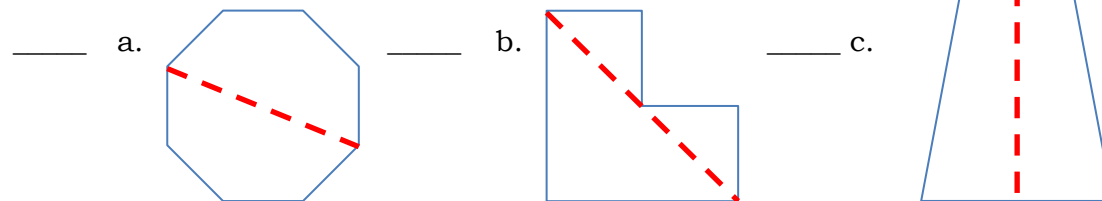
DAY 3

3. Lesson Activity

Sample Activity

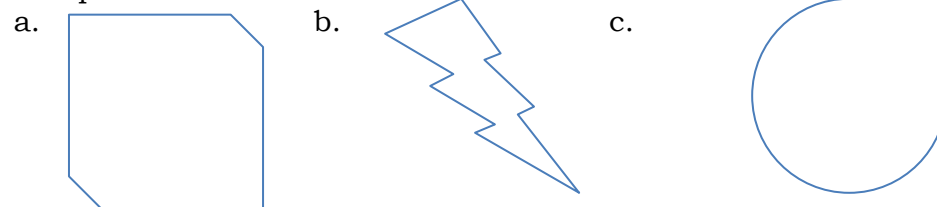
A. Instructions. Tell if the broken line in each figure is a line of symmetry. Write LS if yes and write NLS if not.

Sample items.



B. Instructions. Which of the following are symmetrical figures? Write SF if symmetrical figure and write ASF if asymmetrical figure. If a symmetrical figure, draw a line of symmetry.

Sample items.



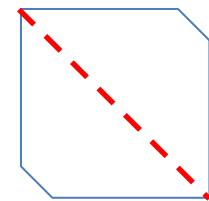
Answer Key:

A.

- a. LS
- b. NLS
- c. LS

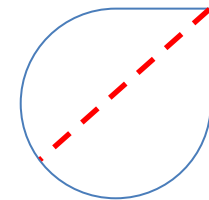
B.

a. SF



b. ASF

c. SF



D. Making Generalizations

DAY 2

1. Learners' Takeaways

Let learners appreciate the lesson by watching this short video.

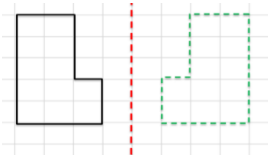
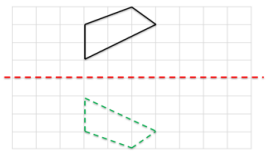
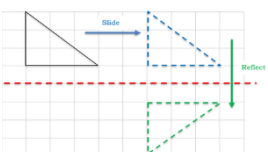
Video: Symmetry Song

URL: https://www.youtube.com/watch?app=desktop&v=YMfusUVk_n8

Remind learners to bring all materials related to the performance task and let them finish this during Day 3.

	Guide Question: What three important math ideas you have learned today? DAY 3 2. Reflection on Learning (Homework) Let learners watch this video as homework. Video: Intro to Symmetry URL: https://www.youtube.com/watch?v=YFzktJNmnpU Performance Task. Let them reflect on the concept of symmetry and make a photo essay on symmetry and the culture of their city. How is symmetry used in the culture of Filipinos?	Note. This performance task is a good way to increase the level of productive disposition (or mathematical disposition) of learners to see mathematics as a worthwhile subject and has relation not only to nature but also to the culture of the Filipino people (and other cultures---this can be done in a GCED integration). A photo essay is a storytelling that uses a series or sequence of pictures to tell a narrative or determine a theme. You can use the following as criteria in checking the photo essay of the learners: 1. visual storytelling 2. quality of photographs 3. relevance to the theme 4. clear and concise captions
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IV. EVALUATING LEARNING: FORMATIVE ASSESSMENT AND TEACHER’S REFLECTION		NOTES TO TEACHERS
A. Evaluating Learning	DAY 4	Answer Key: Activity 1. 1. LS 6. NLS 2. NLS 7. NLS 3. NLS 8. LS 4. LS 9. NLS 5. LS 10. LS Activity 2-3. Check if the line of symmetry divides the image into mirror images. Also, if the figure
	1. Formative Assessment Let learners do all the activities in the Worksheet. (See attached copy of the worksheet) Total points: 30 points Activity 1: Tell Me! Total points: 10 points Activity 2: Total points: 5 points Activity 3: Total points: 5 points Activity 4: Total points: 10 points	

	Rubrics: <table><tr><th>Points</th><th>Remarks</th></tr><tr><td>10</td><td>All mirror images are correct with correct dimensions including the glide reflections.</td></tr><tr><td>8</td><td>Mirror images are correct with the correct dimensions. The incorrect image on the glide reflection (either slide movement or reflecting image)</td></tr><tr><td>6</td><td>Mirror images are correct (same shape) but sizes are not the same. Able to correctly draw the slide movement but was not able to draw the correct mirror image in the glide reflection.</td></tr><tr><td>4</td><td>Mirror images are correct (same shape) but sizes are not the same. Was not able to determine the glide reflection.</td></tr><tr><td>2</td><td>Attempted to draw the images but was not able to determine the correct images.</td></tr><tr><td>0</td><td>Did not attempt to draw the figures.</td></tr></table>			Points	Remarks	10	All mirror images are correct with correct dimensions including the glide reflections.	8	Mirror images are correct with the correct dimensions. The incorrect image on the glide reflection (either slide movement or reflecting image)	6	Mirror images are correct (same shape) but sizes are not the same. Able to correctly draw the slide movement but was not able to draw the correct mirror image in the glide reflection.	4	Mirror images are correct (same shape) but sizes are not the same. Was not able to determine the glide reflection.	2	Attempted to draw the images but was not able to determine the correct images.	0	Did not attempt to draw the figures.	drawn by the learner completes the figure with respect to the line of symmetry drawn. Activity 4. 1. 2. 3.	
Points	Remarks																		
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0	Did not attempt to draw the figures.																		
B. Teacher's Remarks	Note observations on any of the following areas:	Effective Practices	Problems Encountered	The teacher may take note of some observations related to the effective practices and problems encountered after utilizing the different strategies, materials used, learner engagement, and other related stuff. Teachers may also suggest ways to improve the different activities explored/lesson exemplar.															
	strategies explored																		
	materials used																		
	learner engagement/interaction																		
	others																		

C. Teacher's Reflection	<i>Reflection guide or prompt can be on:</i> • <u>principles behind the teaching</u> <i>What principles and beliefs informed my lesson?</i> <i>Why did I teach the lesson the way I did?</i> • <u>students</u> <i>What roles did my students play in my lesson?</i> <i>What did my students learn? How did they learn?</i> • <u>ways forward</u> <i>What could I have done differently?</i> <i>What can I explore in the next lesson?</i>	Teacher's reflection in every lesson conducted/facilitated is essential and necessary to improve practice. You may also consider this as an input for the LAC/Collab sessions.
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