

SYMMETRY AND NON-SYMMETRY OF PLANE SHAPES

3.20.2019

Subject

Mathematics

Prepared By

[Instructor Name]

Grade Level

3

Overview

This lesson plan covers teaching content for;

1. Understanding the meaning of symmetry and non-symmetry
2. Identifying the symmetry and non-symmetry of shapes and objects
3. Reviewing the properties of shapes
4. Word problems involving plane shapes.

Objectives

Students should be able to;

1. Identify the symmetry and non-symmetry of objects and shapes
2. Find lines of symmetry in everyday objects
3. Understand that not all shapes have a line of symmetry
4. Review the properties of plane shapes

Activity Starter/Instruction

1. Display the image of the butterfly.
2. Ask the class to share some things they notice about the image.
3. Some guiding questions you could ask are:
What are the colors of the butterfly's wings?
How are the wings shaped?
4. Once students touch on the idea that the wings match in some way, introduce the word "symmetry."
5. Explain that something has symmetry if it can be split into two mirror-image halves.
6. For example, a butterfly is symmetrical because you can fold a picture of it in half and see that both sides match.

Teacher Guide

Day 1/ Lesson 1: 15 Mins

1. The focus of the lesson is to ensure that pupils recognize lines of symmetry in shapes.
2. Work through the text and both worked examples with the class.
3. Explain that if a shape can be folded in half, and both halves are the same shape, then the shape is symmetrical.
4. A shape can have more than one way that it can be folded and be symmetrical.
5. Give each pupil a loose sheet of rectangular paper. Fold the paper in half along the length and show that both halves are identical, therefore it is symmetrical.
6. Unfold the paper and draw a line along the fold.
7. Explain that this is called the line of symmetry, and cuts the shape into two halves that are the same.
8. Fold the paper again, but along the width and repeat the explanation of symmetry.

Guided Practice

Day 2/ Lesson 2: 15 Mins

1. Discuss shapes and their names. Use this as an opportunity to do revision

Materials Required

- Cardboard
- Image of a Butterfly
- Colour papers
- Drawing paper
- Pencils
- hand mirror
- a bag of shapes
- yarn pieces

Additional Resources

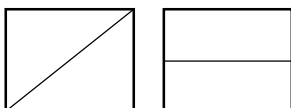
- http://learn.mindset.co.za/sites/default/files/resource-show-note-asset/4292_fdoc.pdf
- <https://www.teacher.org/lesson-plan/symmetry-search>
- <https://www.mathsisfun.com/geometry/symmetry-lines-shapes.html>

Additional Notes

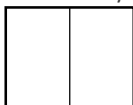
on 2D geometrical shapes.
(integration with literacy -
word recognition)

2. Use these shapes to show the symmetrical lines.
These symmetrical lines are indicated as a dotted line on the varies 2D shape
3. Introduce the terms:
Horizontal lines / Vertical line / Diagonal line. Show these lines on the shapes.

Diagonal Line Horizontal Line



Vertical symmetry



4. Explore Symmetry using mirrors. Give each learner a mirror and a picture which is half done. Let them put the mirror on the line of symmetry to discover the rest of the picture. Allow them to complete the picture with a koki.
 5. Let the learners complete a few activities where they have to complete a picture.
 6. Walk around to ensure that the learners are doing the activity correctly.
-

Guided Practice

Day 3/ Lesson 3: 25 Mins

1. Explain symmetry by doing the folding test.
Prepare your paper before the time. Use colour paper if it is possible.
2. A Triangle can have 3, or 1 or no lines of symmetry:
3. Equilateral Triangle (all sides equal, all angles equal) has 3 lines of symmetry
4. Isosceles Triangle (two sides equal, two angles equal) has 1 line of symmetry.
5. Scalene Triangle (no sides equal, no angles equal) has no line of symmetry.
6. A kite has 1line of symmetry
7. A Rhombus has 2 lines of symmetry
8. A square has 4 lines of symmetry
9. A regular pentagon has 5 lines of symmetry
10. A regular hexagon has 6 lines of symmetry
11. A regular shape with n sides has n lines of symmetry.

-
9. Unfold the paper and draw in the 2nd line of symmetry.

10. Ask pupils if they can find any other lines of symmetry in the rectangle.

Guided Practice

Day 4/ Lesson 4: 20 Mins

1. Place students in pairs.
 2. Distribute drawing paper with colored pencils, etc. The students will also need something to write on when moving outside the room.
 3. Tell students they are to find as many symmetrical objects as possible, make a sketch of each item, and draw the line of symmetry on each.
 4. Allow students time inside the classroom, through the school or other indoor location, and outdoors.
 5. Once completed, the students will organize their drawings in a booklet, stapling the pages together, and creating a cover page with a title.
 6. Finally, allow each pair of students to show some of their drawings to the class and to tell why they are symmetrical. If an object is not symmetrical, allow other students to explain why it is not.
 7. Display completed booklets in an area for other students and/or visitors to review.
-

Assessment Activity

Assessment Activity

1. Evaluation of this unit gauges the extent to which individual pupils have achieved the objectives stated at the beginning of this unit.
2. You should give pupils a set time in which to complete the assessment.
3. Pupils should work through the questions individually.
4. Encourage them not to spend too much time on any one question if they are stuck

Assessment Activity

1. Organize your students into groups of 2-3 students.
 2. Give each group a hand mirror, a bag of shapes, and some yarn pieces.
 3. Have the groups repeat the process you modeled to check their shapes for symmetry. After about 10 minutes, pause the activity.
 4. Have different groups share what they've found thus far.
 5. As each shape is discussed, reinforce why it does or doesn't have symmetry.
-

Summary

Review and Closing

1. Pupils revise the concepts covered in this unit by working through the Revision exercise. Check pupils' progress and monitor carefully how they cope with integrating the content covered in this unit.
 2. Ask learners to find five examples of shapes at home that have one line of symmetry for example, a spoon, a pan, etc.
-