

OUT AND ABOUT

OUTDOOR ACTIVITIES FOR KEY STAGE 2 MATHEMATICS

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SHAPE AND SPACE

Exploring Symmetry

Learning focus

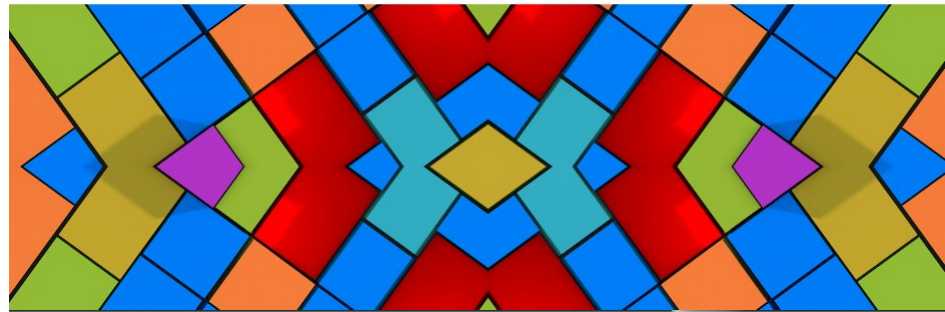
- Identify reflective symmetry
- Recognise the line of symmetry
- Use natural objects to make designs with one or more lines of symmetry

Key vocabulary

- Symmetry
- Symmetrical
- Reflection
- Mirror line/line of reflection/axis of symmetry

Resources

- Pencils, paper and clipboards
- Digital cameras
- Skipping ropes
- Sticks of various lengths
- Collection of leaves/pebbles



Activity

Gather the children in an outdoor area and explain that reflective symmetry will be the focus on the lesson. Elicit children's ideas and prior knowledge of the topic.

Name some symmetrical shapes. What does it mean for a shape to be symmetrical?

Can you think of any natural materials or objects which are symmetrical?

Have examples of man-made and natural materials which are symmetrical to hand. Aim to include examples which have more than one line of symmetry. Draw attention to the line of symmetry on the examples discussed.

Teaching point

3-D objects can also have reflective symmetry. Symmetrical 3-D objects will have a plane of symmetry, while symmetrical 2-D shapes have a line of symmetry. Encourage the children to focus on 2-D shapes or use 2-D representations (photos, drawings) of 3-D objects to explore symmetry.

Set the children the task of working in pairs or groups to search for symmetry in the surrounding natural and built environment. Objects of interest can be drawn or photographed if possible. After around 10 minutes, gather the children together to discuss what they have found. They can share their drawings or digital photos as they engage in discussion.

*Was your symmetrical shape a 2-D or 3-D shape?
Can you explain why you think your shape is symmetrical?*

Explain that the class will now make a symmetrical design using natural materials. Model an example for the whole group. Lay down a skipping rope or large stick to act as a mirror line. Place other natural materials on either side of the mirror line to make a symmetrical design.

If I place this pebble here, where should I place the matching pebble?

Why is this design not symmetrical?

What would I need to change to make it symmetrical?



Teaching point

To create a symmetrical image, matching objects need to be placed on opposite sides and at an equal distance from the mirror line.



Distribute pebbles and sticks of various sizes and ask the children to create symmetrical designs. Children who are proficient at creating designs with a vertical mirror line can be challenged to work with horizontal and/or diagonal mirror lines. Children may also progress to creating designs with more than one line of symmetry.

Taking ideas further

The children may progress to exploring symmetry on a grid. A blank coordinate grid can be drawn on the school grounds using chalk and children can create symmetrical designs, using the grid to keep track of distances and to record grid coordinates if appropriate.

Assessment opportunities

Are the children able to:

- Identify symmetry in 2-D shapes
- Recognise the line(s) of symmetry
- Create symmetrical designs