

Patterns of Light: Diwali Rangoli Design

Learning objective: To understand the cultural significance of Rangoli patterns and apply geometric symmetry and radial balance to create an original design.

Zara the zebra is preparing for the Festival of Lights! Use your knowledge of symmetry, patterns, and vibrant colour theory to answer the questions below and design your own Rangoli.

Rangoli is a traditional Indian art form where intricate patterns are created on the floor using materials like coloured sand, flower petals, or rice flour. During Diwali, these designs are placed near entrances to welcome guests and signify prosperity. They often feature floral motifs, geometric shapes, and radial symmetry, where the pattern radiates outwards from a central point.

Word bank: Symmetry · Radial balance · Geometric · Tessellation · Vibrant · Festival · Cultural · Pattern

1. Zara is designing a Rangoli that is a perfect square. If she wants to ensure the design has reflective symmetry, explain what she must do to the left and right sides of her pattern. (2 marks)

2. Why do you think artists use radial balance, rather than random shapes, when creating a traditional Rangoli? Justify your answer using the concept of harmony. (2 marks)

3. If a Rangoli design is made of 12 repeating segments around a centre point, calculate the angle of each segment if the total circle is 360 degrees. (1 mark)

4. Compare and contrast a Rangoli pattern with a geometric tessellation found in nature (such as a honeycomb). What are the main similarities and differences? (3 marks)

5. What might happen to the visual impact of a Rangoli design if the artist chose only dull, muted colours instead of vibrant, contrasting ones? Explain your reasoning. (2 marks)

Draw: Using a compass and ruler, create a Rangoli design in the space below. Your design must demonstrate radial symmetry and include at least two types of geometric shapes (e.g., triangles, hexagons, or circles). Use a colour palette that represents light and celebration.



Extension challenge: Research the historical origins of Rangoli. Write a short paragraph explaining how these designs have evolved from simple floor markings into complex mathematical art. If you were to create a 3D Rangoli using recycled materials, what textures and heights would you incorporate to make the light play off the design?