

Octopus shapes



Learning objectives

- **Using and applying:** Explore patterns, properties and relationships and propose a general statement involving shapes; identify examples for which the statement is true
- **Understanding shape:** Identify, visualise and describe properties of rectangles, triangles and regular polygons

Problem-solving strategy

Look for patterns

Setting the scene

In this whole-class activity, the problem relies on the children being able to predict and use patterns that involve both colour and shape. They are presented with a grid of shapes in which one shape is missing, which they have to correctly identify from a number of options.

Eight levels are provided. At each level they should identify what type of shape they are looking for, along with the appropriate size and colour, and drag it into the grid. After each shape is correctly identified, Ollie the Octopus gains a sock! If the guess is incorrect, players will be asked to try again. After two incorrect attempts, a new pattern is shown.

Solving the problem

For each of these problems there are three elements to unpick:

1. What is the key shape in the pattern?
2. What is the key colour?
3. What is the key size?

Explain that all three elements are needed to complete the sequence accurately. Ask what sort of criteria the children would need to discuss in order to accurately find the correct missing shape.

Key questions

Representing: How would you show your results? What would be the best way to record your patterns so that you could discuss them later with the class?

Enquiring: What questions would the group ask each other about the shapes and the types of pattern created? How could you begin to answer them?

Communicating: What is the answer to the problem? How would you explain that your shapes are correct? What patterns have you found? Do some have sequences that go beyond the missing piece?

Differentiation

Less confident: Stress the importance of breaking down the problem - in this case into colour, shape and size. Focus on one part at a time and ensure that the children understand the reasons for the final selection.

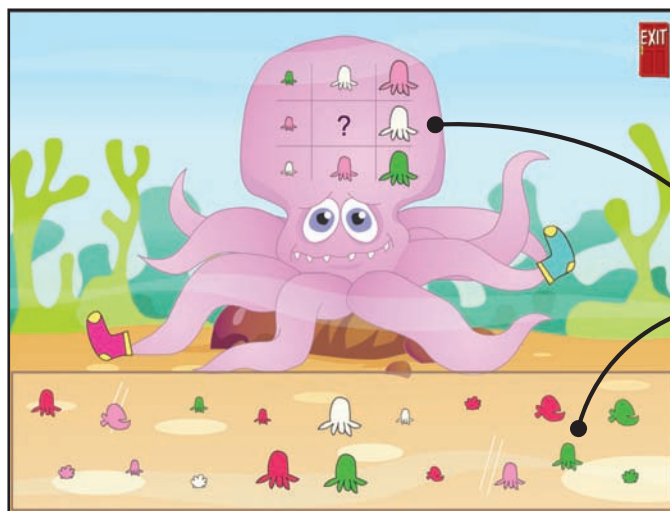
More confident: Ask the children to explain any patterns to the rest of the class at the end of the lesson. You could also invite individual children to lead a whole-class session suggesting how other children might narrow down choices or establish criteria for selection.

Follow up

Encourage the children to use a similar strategy to solve the problem on page 29. There is an open-ended extension of this page, called 'Chris the Crab (2)', available on the CD-ROM.

Problems bank

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Drag and drop coloured shapes into the sequence.