

## Mathematical moment: Developing shape talk with 5 & 6 year olds

### Properties of shape



Marie, a Y1 teacher, wanted to move learners on from simply naming shapes, to thinking deeply about their properties. Inspired by the [Young minds, big maths](#) project, led by Houghton Community Nursery and Durham University, and valuing the role of language in enabling children to explore and make sense of key concepts in mathematics, Marie devised a provocation that drew the learners' attention to the particular properties of shape. Using two pictures showing natural circular structures, she asked the children, "What do you notice is the same about these pictures? What do you notice is different?"

**Ethan:** I think both of them have circles.

**Elise:** But the circles are not the same. These [pointing to the spiralling stem] are more like round things.

**Ethan:** Yeah, I'm not sure if they are circles. The edges are a bit like circles.

**Marie:** Can you think of a different describing word to describe the side or edge of the shape? One that we usually use in our Maths lessons?

**Elise:** They are like, round.

**Ethan:** I think it's curved.

**Marie:** Ok, so we can see some curved sides on our shapes. Are they both circles then?

**Elise:** Oh no! [*running her finger around the spiralling stem*]. They don't join. This one goes a different way. Like around and around.

**Ethan:** Yeah, I thought they were both circles, but they're not. This one has full circles [*pointing to the concentric tree rings*]. But this one doesn't. It's like a snake's tail.

**Elise:** Yeah, because circles have one side that joins. This one [*pointing to the spiralling stem*] just keeps going a different way.

**Marie:** Do you know what we call that?

**Elise:** I'm not sure.

**Marie:** It's a spiral shape. It's got curved sides or edges, but it is not a circle. So, is there just one circle in this picture? [*pointing to the concentric tree rings*].

**Elise:** No, there's 1, 2, 3, 4, 5, 6, 7....I'm not sure. Loads!

**Marie:** Tell me something you notice about the circles.

**Ethan:** Some are little and some are bigger.

**Elise:** I think they're in, like, a pattern.

**Marie:** Oh, really? What is the pattern?

**Ethan:** The circles don't touch each other. They are inside the circle and inside the circle and inside the other circle.

**Elise:** They are getting bigger and bigger and bigger.

**Marie:** Good! You are really thinking about the mathematics here! Brilliant! Ok, I have some matchsticks here. Could you build these shapes with the matchsticks for me?

**Elise:** I don't know – they can't bend; the matchsticks.

**Ethan:** Yeah, they are too straight.

**Marie:** Oh, can we not make a curved edge with straight matchsticks?

**Ethan:** No way! I'll try, but I don't think so.



Other children explored making shapes with matchsticks, inspired to arrange them to form smaller and larger enclosed shapes, discussing the differences between curved and straight lines and the shapes they can make.



Acknowledgement: Marie Birchall, Hillside Community Primary School.