

Can You Build This?

Age 3 to 5

Children explore characteristics of shapes and use both everyday and mathematical language to describe them, talk about positions and solve problems



Children often enjoy construction activities - and a challenge!

Adults could make simple models for children to try and copy.

The Activity

The adult makes a simple construction with a few blocks or pieces of Lego, and challenges the child to copy it with the same pieces or from a selection. Use more different pieces to increase the challenge.

Encouraging mathematical thinking and reasoning:

Describing

That's great! But look very closely: how is your model different from mine? Which block do you need to put to the right of / above / below / behind this red one?

Your blocks are all pointing the same way - can you see these ones are crossways?

Reasoning

How do you think you need to change yours to make it look the same as mine?

How do you need to turn that brick to make it look the same?

Opening Out

Take a photo of a secretly made model and see if the child can copy that, using the same pieces.

What do you think is at the back, underneath the red brick?

I've made a little model which I've got hidden under the table – I'll see if I can tell you how to make it. First, take a blue brick, then put a yellow one on top... Can you make a secret model with five bricks and describe it for me to make?

Recording

Let's take a photo of your best one and see if you can make it again tomorrow.

Can you do a drawing of your model?

The Mathematical Journey

Properties of shapes:

selecting appropriate blocks to match others, correctly identifying properties such as flat, curved etc.

using informal shape language –sharp, slopey, pointy, like a brick, arch, box, roof etc.

using mathematical shape language – corner, side, edge, flat, curved, rectangular, cylinder etc.

Position and spatial properties:

copying arrangements and relative positions of bricks

rotating pieces to match

identifying longer and shorter pieces to match those in the model

using positional language – on top of, next to, underneath, in front of, behind, between, left, right etc.

constructing a 3D model from a 2D picture; identifying hidden pieces which are not visible in the picture; drawing

a model with key features

Measures:

identifying longer and shorter pieces to match those in the model

Development and Variation

Make more complex models, with more pieces and varied shapes.

Use more challenging language like between, in front of, behind, overlapping, at right angles.

Show a model quickly and hide it again: can the child look closely then draw it from memory?

Make some pictures with 2D shapes, and draw outlines for children to fit shapes into. (See Learning Trajectories website for 2D ‘picture maker’ videos: <https://www.learningtrajectories.org/>)

Resources

Building blocks, interlocking bricks, Lego or other construction material, 2D shapes and picture outlines

See Erikson Early Mathematics Collaborative website for other ideas: <https://earlymath.erikson.edu/foundational-concepts/spatial-relationships/>

Acknowledgements Penny Latham



Copyright © 1997 - 2020. University of Cambridge. All rights reserved.
NRICH is part of the family of activities in the Millennium Mathematics Project.