

Dereham Church of England Infant and Nursery School- Mathematics



Year group: Reception

Area/topic: Mathematics- explore 3D shapes

Development Matters - Reception - Select, rotate and manipulate shapes to develop spatial reasoning skills.

Reception - Compose and decompose shapes so that children recognise a shape can have other shapes within it, just as numbers can.

3 and 4-year-olds - Talk about and explore 2D and 3D shapes (for example, circles, rectangles, triangles and cuboids) using informal and mathematical language: 'sides', 'corners'; 'straight', 'flat', 'round'

3 and 4-year-olds - Notice and correct an error in a repeating pattern.

Reception - Continue, copy and create repeating patterns.

Birth to 5 Matters - Range 6 - Investigates turning and flipping objects in order to make shapes fit and create models; predicting and visualising how they will look (spatial reasoning)

Range 6 Enjoys composing and decomposing shapes, learning which shapes combine to make other shapes

Range 6 Uses own ideas to make models of increasing complexity, selecting blocks needed, solving problems and visualising what they will build

Range 6 Spots patterns in the environment, beginning to identify the pattern "rule"

Range 6 Chooses familiar objects to create and recreate repeating patterns beyond AB patterns and begins to identify the unit of repeat

Prior learning

In the Autumn term children looked at shapes with 4 sides and circles and triangles.

Future learning

Children will apply this knowledge during daily maths meetings

What pupils need to know or do to be secure

Key knowledge and skills	Possible evidence
Recognise and name 3-D shapes	When reading books such as <i>Changes</i> , <i>Changes</i> by Pat Hutchins, encourage children to notice where they can see 3-D shapes. Prompt children to replicate the images in the stories using 3-D shapes. Ask them to name the shapes as they select them.
Find 2-D shapes within 3-D shapes	Provide children with a range of 3-D shapes and real-life objects. Encourage them to explore printing with 3-D shapes using paint. What do they notice? What 2-D shape can they see?
Use 3-D shapes for tasks	After reading traditional tales such as <i>Rapunzel</i> , children explore building towers. Which shapes do they need to use to build Rapunzel's tower? Which shapes do they need to place at the bottom of the tower? Which shapes do they need to place at the top? Prompt them to say why they have chosen to place that shape in that position.
3-D shapes in the environment	Go on a shape hunt around the classroom. Encourage children to recognise and name the 3-D shapes they find and prompt them to describe their properties. Ask the children to

Identify more complex patterns Copy and continue patterns Patterns in the environment	find another object that is the same shape or a different shape. Show children an AAB and ABB pattern and ask them what they notice. What patterns can they see? What is the same? What is different? Go outside and model making large-scale patterns with more complex pattern structures such as ABCD, AAB, ABB and ABBA. Use a range of large outdoor resources such as crates, tyres and sticks. Support children to copy and continue the patterns. What comes next in the pattern? Ask children to arrange patterns around a circle, such as a hoop or a paper plate. Prompt them to consider how they will continue the pattern all the way round. Does their pattern fit? Encourage children to view other patterns in the environment and replicate them.	
Key vocabulary		
Same, different, flat face, curved face, 2D, 3D, roll, stack, pattern, next,		
Common misconceptions	Books linking to this area	

Gather a range of recyclable box modelling resources of different shapes and sizes for children to build with.	Circle! Sphere! by Grace Lin Changes, Changes by Pat Hutchins Naughty Bus by Jan Oke
Enhance dough areas with 3-D shapes and real objects for children to experiment with and explore the properties of shapes. Encourage children to create patterns linked to their interests by providing a range of loose parts in different areas of provision.	Rapunzel Shapes, Shapes, Shapes by Tana Hoban Pattern Fish by Trudy Harris Busy, Busy, Busy by Haneul Ddang
Memorable first hand experiences	Opportunities for communication
Many opportunities to play games. Regular use of a range of manipulatives, loose parts, natural objects etc.	Ask and discuss the key questions provided by White Rose Discuss, share and repeat the sentence stems provided by White Rose

DCINA Reasonable adjustments for pupils with SEND

Communication and Interaction

Use a range of visual aids
Give clear instructions one at a time
Repetition
Provide simple instructions
Pre teach vocabulary
Use working wall where modelling is displayed
Give children thinking time Model task

Cognition and Learning

Check understanding regularly
Allow rest breaks
Give thinking time
Colour code signs that could be confusing
Work checklists
Break down tasks into small steps
Give opportunities for over-learning

Social, Emotional and Mental health

Allow access to a quiet and calm space
Give child a special role to increase self esteem
Provide a visual support- what to do if you are stuck
Provide a movement break
Seat pupil by more confident peer
Now and next board
Sand timers
Movement breaks
Break down tasks into small steps

Sensory and Physical

Consider carpet space position
Reduce background noise
Provide a range of manipulatives- dienes may be too small
Appropriate seating
Wobble boards
Writing slope
Enlarge text
Variety of writing tools available