

# Spatial Reasoning Toolkit



**Shape  
properties**

**Birth to 7 years**



**This keyring includes  
typical spatial reasoning  
development and how  
adults can support this.**

**Please note:**

- Ages are approximate
- Each child develops differently and at their own rate
- Ages are a guide and not expectations
- The stages build so earlier spatial learning continues to develop alongside new learning.



**Children are learning to:**  
**Explore differently shaped**  
**objects and their properties**  
through seeing and feeling/  
mouthing.



**0-6 months**



### **Adults could:**

Provide interestingly shaped objects (e.g. in treasure baskets) and encourage babies to explore shape characteristics (e.g. by rolling a ball to them.)



### **Spatial Language:**

'round' and 'pointy'

**0-6 months**



**Children are learning to:**  
**Show an interest in objects**  
which are the same in contrasting  
sizes e.g. selecting a big spade  
or a small spade.



**6-12 months**



### **Adults could:**

Provide similar shaped objects in assorted sizes (e.g. boxes or cups) and point out size differences in picture books (e.g. a big truck, little truck).



### **Spatial Language:**

'same' and 'bigger'

**6-12 months**



**Children are learning to:**  
**Respond to changes** of shape  
e.g. flattening mud pies.



**6-12 months**



### **Adults could:**

Provide malleable materials where children can change the shape (e.g. dough) and the size (e.g. enlarging a puddle) and talk about these changes.



### **Spatial Language:**

'more' 'fill it up', 'long'

**6-12 months**





**Children are learning to:**  
**Attempt to fit shapes into spaces**  
on inset boards, sometimes  
successfully.



**6-12 months**



### **Adults could:**

Provide shape sorters and inset puzzles to fit shapes into.

Demonstrate putting small items inside larger versions (e.g. small bowl inside a large bowl).



### **Spatial Language:**

'inside', 'bigger/smaller'  
and 'fits'

**6-12 months**



**Children are learning to:**  
**Show an interest in shape and size**, sometimes responding to words or gestures for *'big'* and *'small'*, *'round'*, or *'flat'*.



**1 to 2 years**



### Adults could:

Talk about the properties of shapes when fitting objects into spaces, e.g. *“these corners won’t fit, we need a round shape.”*



### Spatial Language:

‘flat,’ ‘round’ and ‘bumpy’

**1 to 2 years**



**Children are learning to:**  
**Attempt to fit shapes** into spaces, beginning to select a shape for a specific space.



**1 to 2 years**



### **Adults could:**

Provide similarly shaped objects that can nest inside each other (e.g. pots, boxes, baskets, inset boards) as well as jigsaw puzzles with a small number of pieces.



### **Spatial Language:**

'inside', 'fits' and 'larger'

**1 to 2 years**



**Children are learning to:**  
**Respond to differences**  
**between shapes and sizes,**  
and associated informal  
language as well as gestures.



**2-year-olds**



### **Adults could:**

Provide blocks of different sizes and when building, talk about the choice of blocks, referring to specific shape properties.



### **Spatial Language:**

'flat', 'round', 'giant' and 'teeny'

**2-year-olds**





**Children are learning to:**  
**Recognise that two objects**  
**have the same shape** e.g. child  
chooses two circles for eyes.



**2-year-olds**



### **Adults could:**

Make pictures together using shapes. Demonstrate comparing two objects to see if they have the same shape (e.g. two blocks or collage pieces).



### **Spatial Language:**

'flat', 'round', 'giant' and 'teeny'

**2-year-olds**



**Children are learning to:**  
**Show awareness of differences between shapes**, including selecting items by their shape and size so they are appropriate (e.g. chooses a triangular block for a roof).



**3-year-olds**



### **Adults could:**

Provide a range of resources, e.g. recycled boxes, pattern blocks.

Offer an appropriate/  
inappropriate shape for their  
purpose, to investigate  
children's thinking.



### **Spatial Language:**

'slanting', 'pointy'  
and 'too large/small'

**3-year-olds**



**Children are learning to:**  
**Respond to shape language**  
(e.g. *straight, round, slanting, pointy*), and shape names  
(e.g. *circle, triangle*).



**3-year-olds**



### Adults could:

Talk about ‘nearly’ shapes (e.g. *‘This is like a square, but it has curved corners’*).

Model selecting shapes for a purpose (e.g. *“What will we use for the elephant’s trunk?”*).



### Spatial Language:

‘straight’ and ‘round’

**3-year-olds**



**Children are learning to:**  
**Move and rotate shapes** to fit  
the space or create the shape  
they would like.



**3-year-olds**



### **Adults could:**

Provide jigsaws and train tracks for turning and flipping shapes and checking fit.



### **Spatial Language:**

'turn over', 'around' 'bottom'  
and 'top'

**3-year-olds**





**Children are learning to:**  
**Understand and use mathematical terms** to describe shapes (e.g. *cylinder*) and properties as well as informal language and analogies (e.g. slanty, wiggly, box or roof-shaped).



**4- and 5-year-olds**



### **Adults could:**

Play games (e.g. partially reveal a shape - what shapes could it be/not be? Why?) or use a feely-bag containing familiar items (3D shapes) to describe properties.



### **Spatial Language:**

'face', 'corner'  
and shape names

**4- and 5-year-olds**



**Children are learning to:**  
**Identify several examples of the same shape** (e.g. different triangles) and be able to visualise that a shape is the same even in different orientations.



**4- and 5-year-olds**



### Adults could:

Provide varied examples of shapes (e.g. not all equilateral triangles) and in different orientations (e.g. squares positioned on a corner). Encourage children to turn and flip shapes in their mind before moving them.



### Spatial Language:

'turned around'  
and 'on its corner'

**4- and 5-year-olds**



## Children are learning to:

**Use mathematical terms** to describe regular and irregular shapes (e.g. *cuboid*, *prism*, *pyramid*, *hexagon*, *octagon*).

Describe shapes using mathematical terms for properties.



**6- and 7-year-olds**



### Adults could:

Place 3D shapes into a feely-bag to match with some they can see, by asking yes/no questions, e.g.  
*'Does it have circular faces?'*



### Spatial Language:

'right angle', 'face' and 'vertex'

**6- and 7-year-olds**



**Children are learning to:**  
**Visualise transformations** using reflection and rotation to predict how shapes will look.



**6- and 7-year-olds**



### Adults could:

Using the same size (e.g. 5-squared) pentominoes, prompt children to discuss which are reflections and rotations of another. Predict which will fit into outline spaces if turned or flipped.



**Spatial Language:**  
'rotate' and 'flip'

**6- and 7-year-olds**





For children's book ideas  
related to shape  
properties visit  
[www.earlymaths.org/  
spatial-books](http://www.earlymaths.org/spatial-books)

**Birth to 7 years**

For more ideas and  
information please scan  
the QR code below to  
visit the Spatial  
Reasoning Toolkit



Centre for  
Educational  
Neuroscience



EARLY  
CHILDHOOD  
MATHS GROUP



Copyright © 2023 Early Childhood  
Mathematics Group.