

Ready for Babies?

Maths in the Baby Room

The earliest days



During the first two years of life, neurons are connecting at a more rapid rate than during the rest of life.

Babies begin exploring the world with their senses; contrasting colours, tactile objects or a toy clattering onto the floor all provide stimulus to a baby's developing brain.

Vision - black and white images and objects



A newborn baby can see something next to them with their peripheral (side) vision, but their central vision is still developing. Within a couple of weeks, they can see light and dark ranges and patterns. The contrasts offered by black and white objects and images will draw their attention.

At about 2 months old, babies can follow a moving object with their eyes as their visual coordination improves. At around 3 months old, babies may have enough eye and arm coordination to bat at a nearby moving object. At around 5 months old, a baby's ability to see how far an object is from them has developed more fully. They get better at reaching for objects both near and far. They also have good colour vision at this point, though not quite as fully developed as an adult's.

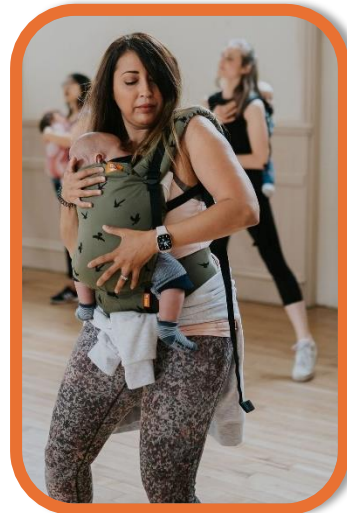
Black and white images and objects can help babies build brain connections: Black and white toys can help newborns process the world around them. Discerning these contrasting patterns are some of the earliest steps in mathematical development.

Songs, music, rhythm and beat

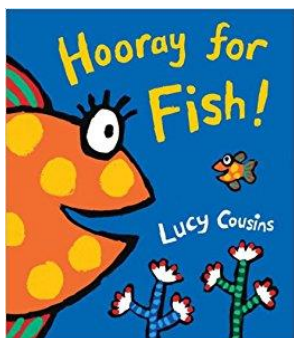
Gently tapping or stroking your baby as you sing a song can help them develop awareness of a steady beat. Softly singing a song as you gently rock your baby in your arms as you try to sooth them. We naturally bounce them to a heard or imagined beat. Such experiences are some of the earliest experiences of rhythm and pattern. Rhythm and pattern are deeply connected to mathematics since the ancient Greeks who used harmony and rhythm as a basis for their mathematical ideas.



Combining songs and nursery rhymes with clapping, tapping and actions are all helping to develop one-to-one correspondence. Moving to music and dancing too.



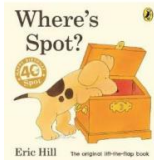
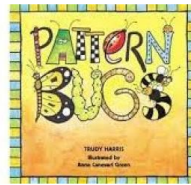
<https://www.communityplaythings.co.uk/learning-library/articles/learning-through-music>



Story Books

We enjoy story books with children long before they can read. We enjoy numbers and counting long before they can calculate.

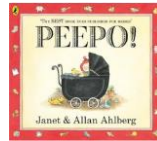
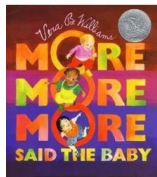
Research findings have confirmed the rich mathematical possibilities of picture books; when pairs of parents and children were observed sharing a picture book, the child's mathematical learning was encouraged and supported as the parent provided strategies, asked questions and provided information. (Anderson et al, 2004)



Surprising animals fit into spaces of varying shapes and sizes.

Contrasting simple images for very young babies.

Numbers to 5 (and more) and the days of the week.



Eyes, toes numbers and positions.

A hole to peep through and a repetitive pattern.

A counting rhyme.

Numbers



Research shows that even babies under one year of age have some sensitivity to quantities and number: babies have been found to recognise the difference between sets of one, two and three objects and young children often use their bodies as a tool for understanding mathematical concepts such as time, space, direction and positioning (in Evangelou et al, 2009). Children have numbers counted for them in a natural way all the time, for instance:

- Counting steps
 - Counting fingers and toes
 - Talking about 'more' and 'all gone!' when eating.

We are doing it all the time.

Shape, Space and Measure



Babies are building towers from a very young age.

Their minds start to process concepts like gravity, shape and symmetry years before they learn the language for these terms.

[What happens in the baby room](#) | [Training resources](#) | [Community Playthings](#)

Stimulating Environment and the right kind of Resources

The interaction of responsive caregivers is vitally important. The significance of both a stimulating environment and adult interaction is reflected in research about children's mathematical development as they move through the earliest years.



Sticks and stones are a great mathematical resource, as are pinecones, feathers and shells (make sure they are clean and free of sharp edges).



Treasure baskets and packaging are full of endless experiences that will support mathematical development.



Balls and slopes promote spatial reasoning and problem-solving skills.

Mathematical learning every day

- Make counting objects or actions a regular habit. For example, count the stairs every time you go up, count the number of plates on the table before a meal or count fingers and toes after bath time.
- Sing counting songs or rhymes. For example, 'Five Little ducks', 'One, Two, Buckle my Shoe' or 'Ten Green Bottles'. Repeat the same songs or rhymes on a regular basis and use finger actions to show the mathematical meaning of the words.
- Use the language of maths. For example, use words such as 'more' or 'less' to compare quantities when you are cooking together. Use words such as 'add' when putting pieces of fruit on a plate; and 'take away' when pieces of fruit are eaten!
- Share books together. Read picture books with your child and talk about the story and the pictures. Ask your child open-ended questions: 'What do you think will happen?'
- Provide collections of safe, interesting objects for counting and mathematical play. This might include blocks, cars, teddy bears, recycled objects or natural resources.

From [Maths Brief MAR19.pdf \(ncb.org.uk\)](#)

Observing maths

- **Shape:**
What do babies do to explore the shape of an object, such as a rattle or ball?
- **Spatial awareness:**
When babies are freely wriggling on a mat, how do they use their bodies to explore the space around them?
What hiding and revealing games do babies enjoy doing again and again?
- **Pattern:**
What rhymes or songs with repeated actions or movement do babies enjoy?
What actions or games do babies enjoy doing over and over, expecting the same thing to happen every time?
- **Number:**
What simple rhymes or songs do adults sing with babies that contain numbers?
When do babies notice a change in the number of items being displayed, for example, blocks in a tower?

From DfE Early Years Development Training - Module 6
[Early years child development training : Home page \(education.gov.uk\)](#)