Pattern books

This list includes books with potential to develop children's understanding of different kinds of patterns, with sections focusing on ***Repeating, Spatial*** *or* ***Growing Patterns***. The different kinds of patterns are described below. The section ***Books with patterns to discuss*** provides pictures of different patterns in a range of contexts. Sometimes the patterns are explicit, but sometimes they are less obvious or embedded in stories: we do not suggest you ruin a good book by diverting children's attention from other aspects which interest them. Reading and sharing the book together is important, before using the book to focus on pattern and develop the children's understanding of pattern in a mathematical sense. We also include some ***Books with repetitive story structures***: many familiar picture books, rhymes and traditional stories have a patterned, repetitive structure (such as the increasing number of characters or repeated phrases). If these are read with consistent intonation and rhythm, the children will readily notice and use the pattern to predict what comes next. Then the adult can build upon the mathematical learning opportunities, for instance by representing the pattern with toys or pictures.

We have suggested age ranges from two to seven years: the pattern focus might vary according to the age and experience of the children. Finally, we also offer some guidance for using the books to develop mathematical understanding, including useful links to other sites and lists.

Some of these books may be out of print, but are available second hand or from library services. You can view the books via the Youtube links provided, or by accessing https://archive.org. Please note that some Youtube videos are preceded by adverts which may not be suitable for children.

Different kinds of patterns

There are three main kinds of patterns which children meet in the early years:

Spatial patterns involve the same items in an ordered arrangement: for instance flower petals, dotty dice or mehndi patterns.



These usually include the same shapes, equally spaced and sometimes rotated or reflected in symmetrical patterns.

Repeating patterns include a part which is repeated over and over again in a sequence: this is the unit of repeat. The same pattern structure can be made with all kinds of things, for instance coloured blocks, small toys, leaves, twigs, conkers and shells

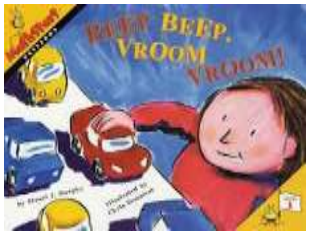
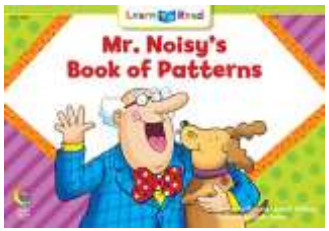
and also in different modes, with movement, sounds and words. Older children describe pattern units using letters, like ABC or AABB, and make up their own symbols for actions or sounds.

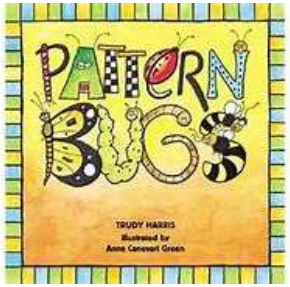


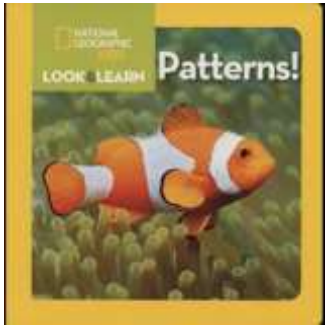
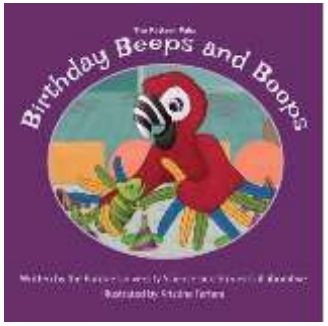
Growing patterns usually involve things getting bigger (or smaller) like circles on an onion or leaves on a fern. Children enjoy ordering things by size and noticing number patterns, beginning with the counting numbers increasing by one. Many stories have patterns of increasing or decreasing numbers of characters.



Sometimes designs are called ‘patterns’, when there is no regularity, repetition or rule: these offer the opportunity to discuss what is *not* a pattern and why.

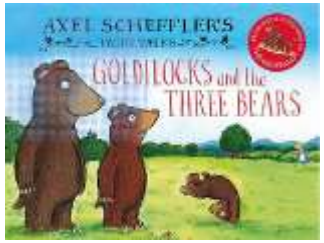
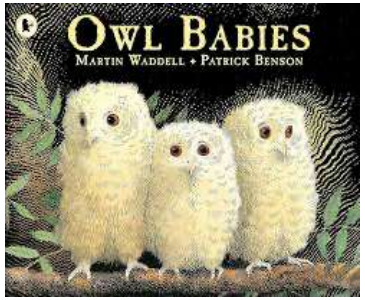

Books focusing on Repeating Patterns		Description	Developing the maths
	***Beep beep vroom vroom*** Stuart J Murphy 3-5 years https://www.youtube.com/watch?v=1yH06aRlks4	Kevin is playing with toy cars of three different colours, making a different sound for each colour of car. He lines them up in his favourite pattern but Molly keeps mixing them up.	Repeating patterns use toy cars of three different colours. The children mix up the cars and line them up in different patterns on a shelf: two ABC patterns, an AABBCC, and an AABCCB pattern. There is an invitation to check the difference between the two ABC patterns (which are reversed) and a new set of cars introduced which are in an AB pattern. Children could use toy cars to make their own repeating patterns.
	***Mr. Noisy's book of patterns*** Rozanne Lanczac Williams 3-5 years https://youtu.be/CTTzueIbZb4?feature=shared	The theme of patterns is explored through sounds that Mr Noisy creates as he experiences his day. Vehicles, actions and singing are all presented in pattern format.	This story presents many ideas for young children to move and make noises outside, using large sounds and actions to explore a range of patterns, including ABC, AABB. Children could recreate the sound patterns introduced in the book and then substitute their own sounds for Mr Noisy's, e.g. the AB pattern of Hi, Hello or the AAB pattern of feet stamp noises. They could then predict and extend the patterns.

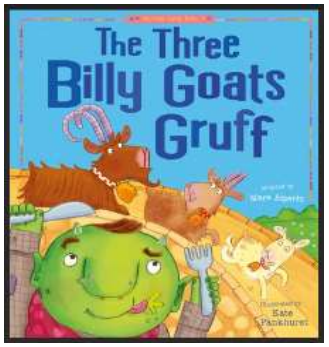
	***Pattern bugs*** Trudy Harris 4-7 years https://www.youtube.com/watch?v=4g2fKY_mwYI	The bugs have different action or sound patterns e.g. a beetle's pattern is '*skitter, scoot, crawl*' and a cricket goes '*chico, chico, chirp, chirp'*. Page breaks invite children to continue the patterns. The page borders show the same patterns in colours.	This includes complex patterns ranging from AB and ABC, to AABB and ABCC.Children will enjoy predicting how each word pattern continues and spotting the same pattern in colours in the page borders. The harder challenge is to identify just the pattern unit, e.g. *The bit that keeps repeating is 'twinkle, twinkle, dim'*. Some children enjoy using letters: e.g. *It's an AAB pattern.* They can act out the action patterns, and represent these in other ways e.g. as decorative border patterns or with musical instruments.
	***Pattern fish*** Trudy Harris 4-7 years https://www.youtube.com/watch?v=7_mqVCewsYA	Like *Pattern Bugs*, the fish have different action patterns. There are other patterns to spot on the pages, as well as the matching border patterns.	Children can predict how the patterns continue, identify the unit of repeat and spot how the border patterns have the same structure. They might do this in their own words e.g. *Two the same and one different* or *AAB*. Children can make their own fishy action patterns, describe these in words, make up symbols to represent them or play them with musical sounds.

	***Patterns!*** National Geographic Kids Look and Learn Series 3-5 years https://www.youtube.com/watch?v=w6twftHYUFU	On each page there are examples of repeating patterns to be discussed and in many cases you are invited to continue the pattern.	The earliest patterns in the book are creatures with spots and creatures with stripes. You could make cards with similar images and play 'same and different' games such as matching pairs or snap. You could help children to recreate the repeating patterns found in the book with photo cards or objects. Children could be encouraged to create their own patterns with the cards or objects and challenge others to complete their patterns.
	***Pattern pals 1. Birthday beeps and boops*** The Purdue University Science and Stories Collaborative 6-7 years https://www.youtube.com/watch?v=M5DhtIt6HBU&t=1s	Zoe the parrot is planning a surprise party with streamers, hats and plates all in the same colour pattern, with help from Clara the chameleon. However, the cake doesn't match - and who is the party for? There are other patterns to spot on Clara and Zoe themselves.	There are two main patterns, AB and AAB, shown in colours,shapes and sounds. Zoe points out that the green purple AB pattern is the really the same as the blue yellow pattern on the cake, describing them as *beep, boop* patterns. Similarly she describes the AAB pattern of the star, star circle shaped balloons as *beep, beep, boop.* Children can spot this is the same as the drum pattern *'boom boom, clash'.* In this way the same pattern structures are identified and generalised with invented names. Children could make *beep, beep, boop* patterns with other objects, actions or sounds, or make up other patterns using *beeps* and *boops*.

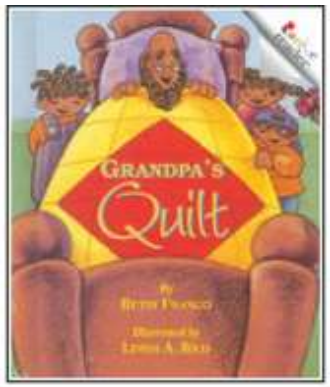
	***Pitter pattern*** Joyce Hesselberth 3-4 years https://www.youtube.com/watch?v=BhlPCnaVrmQ	AAB patterns are introduced through familiar images, such as boot, boot, puddle. This builds to noticing the pattern of days of the week. Links are made with patterns that can be found in music and dance.	Invite children to put on Wellington boots and step in puddles to make footprint patterns, e.g. 1 foot, 1 foot, jump. Children can use untuned percussion and body movements to copy some of the patterns and extend to generating their own. The images show an ABCD dance pattern, but you may want to start off with AB (jump, kick, jump, kick). You could go on a similar walk through your outdoor area to notice patterns in the environment.
	***Press here*** Hervé Tullet 3-6 years https://www.youtube.com/watch?v=PkW_Q6f7kOI	This rather surreal book isn't really about repeating patterns, but on a few pages there is a pattern with an error to spot. And it is funny!	There is a repeating pattern of coloured dots where on three pages, two colours have swapped. Children enjoy spotting the error and 'fixing' it. You can make other patterns with errors to spot and fix. Pairs of children can play this as a game with their own patterns.

	***Pattern pals 2. Sleepover similarities*** The Purdue University Science and Stories Collaborative 6-7 years https://www.youtube.com/watch?v=Im4EgRlPzSo	Zoe misses her house, so Clara points out that patterns in their houses are really the same, describing them as *zip,zap* and *zip, zap, zooply, zoop*!	As in *Birthday beep and boops*, the pattern structures are described with invented names, to help generalise them: an ABC pattern in different colours is a *zip, zap, zop* pattern. Children could make up other patterns using *zip, zip, zop, zooply* and *zoop*, or make up their own words to describe patterns.

Books with repetitive story structures		Description	Developing the maths
	***Goldilocks and the three bears*** e.g. Axel Scheffler 3-5 years https://www.youtube.com/watch?v=pZen2uW4Kdc	In this classic tale Goldilocks finds the porridge too hot,too cold or just right; and beds too big, too little or just right…	The story repeats the same pattern structure: too much, too little and in the middle or *just right*.This well-known Goldilocks principle can be applied in lots of contexts - too big / too small, too high / too low, too wide / too narrow, too wet / too dry. Children can act this pattern out in different scenarios and with different things, for instance, in body movements, with sand, with musical instruments.
	***Owl babies*** Martin Waddell 4-5 years https://www.youtube.com/watch?v=74BE3eQl7uQ	One night, the three owl babies wake up and find that mummy owl is gone. As they wait in their tree, they wonder where their mummy has gone - and at the end of the story, they are relieved when she comes back.	Children might be encouraged to notice the repetition in the story - both the movement and speech of the three owl babies always follows the same pattern: first Sarah, then Percy and lastly Bill. Children might also notice that Bill always says the same phrase *I want my mummy!* (apart from the final page when his mummy returns). Acting out the story or making-up an action or a gesture for each character to do whenever their name is mentioned would also emphasise that the order is always the same. The adult can then retell the story missing out the names, encouraging the children to add these in in the correct order.

	***Three Billy Goats Gruff*** 3-5 years https://www.youtube.com/watch?v=CfHiQ-OLYQA&t=182s	Three Billy Goats Gruff is a traditional tale about three goats who need to outwit a troll to get over the bridge that leads to their feeding ground. There is repetitive language throughout the story.	The story repeats the same language structure throughout the story. This provides a great opportunity to act out the story and use the story language that provides a nice rhythmic pattern to it - *Who's that clip, clopping over my bridge?* Patterns could be explored using the language such as- clip, clop, clip, clop and this could be extended to making up different word patterns, action or body patterns when acting out the story. This story also lends itself to exploring size by looking at the story language used to describe the different sized goats.
	***Walking through the jungle*** Julie Lacome 3 to 5 years https://www.youtube.com/watch?v=rkqYjWMeEL8	A young child moves through the jungle in different ways, encountering different animals, which make different sounds.	The language pattern of this book is established from the first page. Young children will quickly be able to join in with the repeated phrases, predicting the unseen animal from related noises that they make. Children will enjoy acting out the movements presented in the story, e.g. crawling, leaping. They can also be encouraged to copy the animal sounds and movement. The story could be extended by children as they continue the repeated pattern of words but add their own animals and sounds.

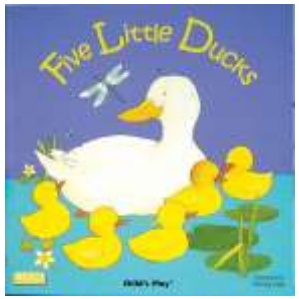
	***We're going on a lion hunt*** David Axtell 3 to 5 years https://youtu.be/EEsuNhMgNGY?feature=shared	Two sisters excitedly hunt for a lion through the African savanna. All goes well until they reach a big dark cave.	The repeated, rhythmic language of this story presents it as a poem. There are AB patterns within the words, e.g. *squish, squelch, squish, squelch,* but the main pattern emphasis is on the repetitive structure of the story. Children will enjoy joining in with repeated words and they can then act out events. There is also great potential to act this out in the garden and physically explore positional language.

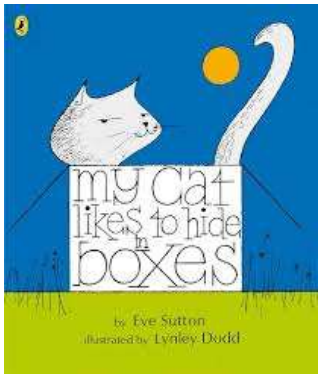
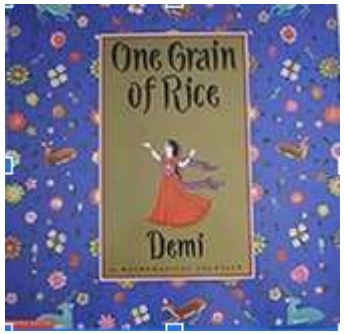
Books focusing on spatial patterns, including symmetry		Description	Developing the maths
	***Grandpa's quilt*** Betsy Franco 6-7 years https://www.youtube.com/watch?v=qXI1_6esJ2M	Grandpa sleeps under a quilt which doesn't cover his feet. The children find ways of making the quilt longer while keeping a symmetrical pattern, eventually rearranging the star on the quilt into a 'diamond'.	The quilt is made from 36 squares arranged as a 6x6 square, with a central red star design made from 4 red and 8 red / yellow squares. You could provide 12 paper squares, 8 of which are diagonally half red and half yellow and 4 of which are red. This will offer opportunities for children to arrange them to recreate the star and the 'diamond' and explore making other symmetrical designs.
	***One hundred hungry ants*** Elinor J. Pinczes & Bonnie MacKain 6-7 years https://www.youtube.com/watch?v=KXLNe5zfrvc	100 ants are in a long file then group themselves in different ways in order to reach the picnic faster. They start with two rows of 50, and eventually make 10 rows of 10.	This book prompts the investigation of arrays with different numbers of rows and columns. Children can arrange 12 or 18 things in different ways using equal rows, then investigate arrays with other and larger numbers.

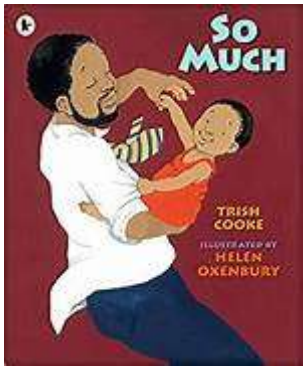
	***The magic mirror book*** Marion Walter (See also her other mirror books) 5-7 years no videos available	A wide variety of images are included on which readers place the integral mirror to make new pictures, according to invitations such as “make the worm longer”, “can you see another heart?”	Providing a set of mirrors to place on postcards or magazine images will lead to discussions about symmetry. Hinging two mirrors with tape and placing these with small collections of counters or other objects will also enable children to explore symmetrical patterns.  
	***The very busy spider*** Eric Carle 3-5 years https://www.youtube.com/watch?v=TfL0g-XRxnA	A spider builds a web on a farm fence. Animals keep interrupting with requests, but the spider ignores them because she is busy building her web- until the rooster asks her to catch a ‘pesty fly’, and she catches it in her now complete, highly sophisticated web.	The web starts with one triangle with lines coming out of it, and becomes increasingly complex, with a background of ever more triangles and a centre with increasing concentric circles. This could be seen as involving a growing, as well as a spatial, pattern. It is multisensory, as the web pictures are raised on the page and can be felt as well as seen. Children could be asked to draw webs, or create them out of paper shapes and children could take turns adding to one another’s web by extending the pattern. Here is a lesson plan by the British Council for using this book with Year 1 children.

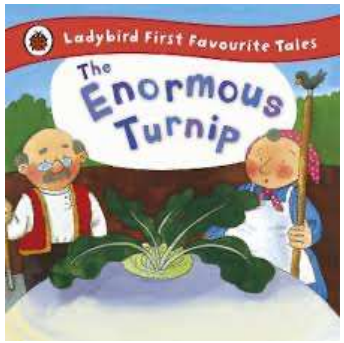
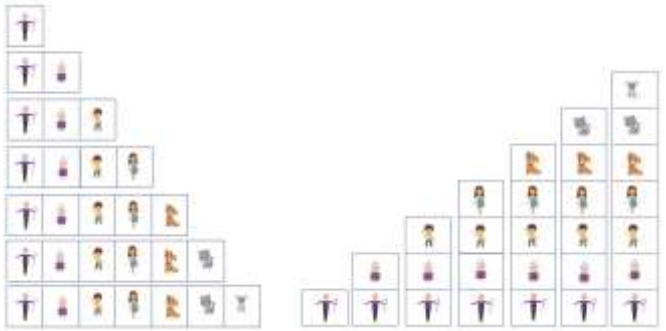
Books focusing on growing patterns		Description	Developing the maths
	***10 in the bed*** e.g by David Ellwand 5-6 years https://www.youtube.com/watch?v=V7rchK2ipQ4	This version has clear images of each teddy to be counted. On each double page we see the teddies left in the bed **and** the teddies that have fallen out of bed. In the end all ten get back in bed.	This book shows both growing and shrinking patterns: as each teddy falls out of bed, there is one more teddy out of bed and one fewer teddy in bed. But there are always ten! As they say the rhyme, children could help to represent these as two related staircase patterns, one going down and the other going up, with counters, blocks, or pictures.

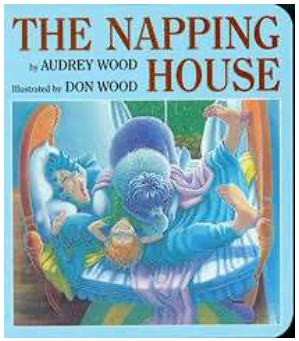
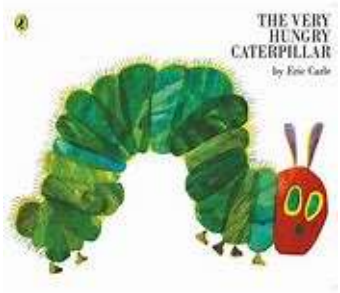
	***A-B-A-B-A-A: A book of pattern play*** Brian Cleary and Brian Gable 6-7 years https://www.youtube.com/watch?v=qZxR89eK4lM	This rhyming book with cartoon creatures starts with repeating patterns, then progresses to number patterns and skip counting in 2s and other numbers.	This describes patterns of shapes, colours or other items '*repeating in a certain kind of way so you know what's next'* or as an arrangement that is predictable. It also has number patterns increasing by 1 and 2, including 1,3,5,7.. and shows tallies grouped in fives, suggesting skip counting in 2s, 4s, 5s and 10s. Children could explore these patterns with towers of bricks, on a number line or 100 square.
	***Anno's magical multiplying jar*** Masaichiro and Mitsumasa Anno 5 years up https://www.youtube.com/watch?v=N7pEMS2kcFU	Opening a magical jar reveals a special island, the contents of which increase by 1 each item, until opening 9 boxes reveals another 10 jars in each … *How many jars in all?* Explores factorials pictorially.	Although not an easy concept (the maths is explained at the back of the book) the growth of the numbers is exciting and beautifully presented. Children are often awed by the quickly growing amount and can enjoy exploring together how many jars there might be and why, and drawing their solutions. Providing a set of nesting boxes and placing 1, 2, 3, 4 …. in each successfully might be interesting for them.

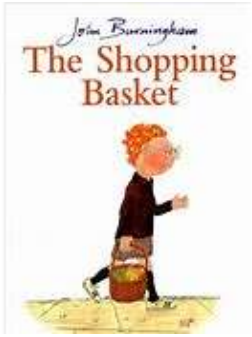
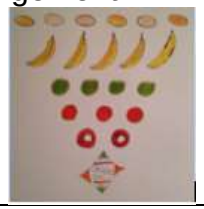
	***Five little ducks*** e.g. Childs Play version 2-5 years https://www.youtube.com/watch?v=Qzyv6NOoX9E&t=158s	This version of the traditional rhyme has clear images of the ducklings. Mummy takes 5 ducklings onto the pond and one by one they disappear before all reappear at the end. This is typical of many rhymes with a 'shrinking pattern', rather than a growing pattern.	This rhyme is best enacted with props, so you can point out and count the ducklings in the book and then the props. Children can show the numbers of ducklings on their fingers throughout the song and also predict the next number. Older children can use numerals as labels as the total changes. You could adapt the rhyme to have different settings (sea, river) and creatures (sharks, fish, crocodiles…). Children can compare other rhymes with shrinking patterns - or with a growing pattern, like '*One elephant went out to play'.*

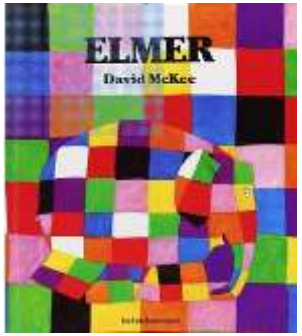
	***My cat like to hide in boxes*** Eve Sutton 3-5 years https://www.youtube.com/watch?v=TaxCVUFjTNM	This poem about cats introduces a new cat from a different country on each repeat. The poem builds using a repetitive structure where the children quickly begin to predict the final line each time, *But my cat likes to hide in boxes*.	Encouraging children to join in, particularly with the *My cat likes to hide in boxes,* gets them to use the structure to predict. To emphasise the growing pattern, you might use toy cats, children in cat masks or pictures of cats to represent the sequence and the 'one more' structure. Children can count and predict how many cats. One more cat is added on each repeat until there are 8 cats. On the last page the final *My cat likes to hide in boxes* is replaced with a summary of all the cats. This break in the growing pattern grabs the children's interest.
	***One grain of rice*** Demi 5-7 years https://youtu.be/_CdAXYU_LYs	An Indian folk tale of a clever village girl outwitting a selfish raja, showing how doubling for 30 days results in a billion grains of rice. There are beautiful illustrations in the style of Indian miniatures.	The story has the 'wow' factor of big numbers and some lovely arrays of pack animals to count. A chart at the end shows the number pattern: older children could try doubling from one, doubling numbers of hundreds, thousands and millions, or use a calculator and try reading the numbers. There is also a message about how knowing maths can help poor people.

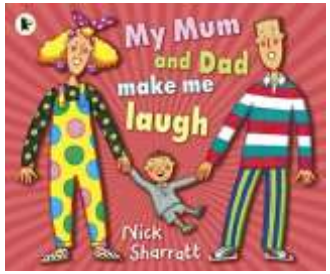
	**Pattern pals *3. Levels in the library*** The Purdue University Science and Stories Collaborative 5-7 years no video available	This book has some questions that adults can ask children, if it doesn't spoil the story. Zoe and Clara visit the library and put books and other resources in growing patterns when Zoe keeps mixing them up.	Zoe and Clara put the books in a 'one more' growing pattern in stacks and on shelves, then a 'two more' growing pattern. Children could make their own stacks of books where the pattern grows by some more each time, predicting how many will be in the next stack and perhaps how many in the 10th, 20th or millionth stack! There are also a range of repeating patterns to spot and discuss: Clara has an AB pattern body and Zoe has ABC and AB pattern feathers. In the background there are more patterns: e.g. 'scarf, hat', AB pattern on trees with one missing, AB and AAB in beads, ABC lights.
	***So much!*** Trish Cooke 5-7 years https://www.youtube.com/watch?v=injID1jiWbI	A lovely Afro-Carribean story which models a growing pattern as more and more family members arrive to hug, kiss, squeeze and eat up the baby because everybody loves the baby so much!	The children could have cards showing family members and build a staircase pattern as you read the story.

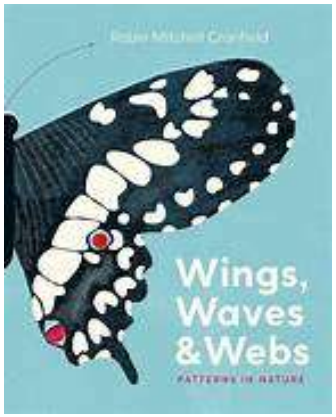
	***The Enormous Turnip*** e.g. retold by Irene Yates 4-6 years https://www.youtube.com/watch?v=YTLcexj0ECc	In this traditional tale, a man plants turnip seeds and one of the turnips grows bigger and bigger and bigger. When he tries to pull up the turnip, it won't move, so he calls another character to help, and then another, and then another … until finally the turnip is pulled out of the ground.	Children could act out the story with one more child joining the line each time, or using toys to represent the characters. The growing pattern in the story could be represented with a staircase pattern, using cards showing the characters and building the staircase either horizontally or vertically.  Children could also make staircase patterns using interlocking cubes, loose parts or Cuisenaire rods. They could also use instruments with a different sound representing each character to 'play' the growing pattern.

	***The napping house*** Audrey Wood 5-7 years https://youtu.be/a3hZFsF-OIo	First there is one character sleeping on the bed, then two, then three, then four… The characters then fall off the bed in turn so there is a shrinking pattern as well as a growing pattern in the story.	The children can have characters on cards to build a staircase pattern going up (and then down again). This video shows the pictogram.  Children can predict how many characters are going to be on the bed by adding (or subtracting) one.
	***The very hungry caterpillar*** Eric Carle 4-6 years https://www.youtube.com/watch?v=eXHScpo_Vv8	In this classic story, there is a growing pattern as the caterpillar eats one apple, two pears, three plums and so on, before making a cocoon and turning into a butterfly.	The number of fruits increase by one each day up to five (with a total of 15). Children can make and extend their own patterns with other items, such as different kinds of leaves.  Children can also spot the repeating pattern of the days of the week, as well as predicting the repetitive phrases as they turn the pages. They could also investigate reflective patterns of butterfly wings, e.g. by making a design on one wing for a friend to match by reflecting it on the other wing.

	***The shopping basket*** John Burningham 4-7 years https://www.youtube.com/watch?v=s_HYKelQG6Y	Steven goes to buy 6 eggs, 5 bananas, 4 apples etc. One of each item disappears as he meets various threatening animals. The whole collection of 21 objects is shown in a triangular arrangement. 	As one item is removed from each number to 6, children can predict the number of items remaining. Children can make similar patterns with other objects, such as small toys or shells, and label each line with a numeral. They could also explore other triangular number arrangements, with 6, 10 or 15 things.
	***There was an old lady who swallowed a fly*** Pam Adams 3-6 years https://youtu.be/DONaLfFQqG4?feature=shared	The illustrations of this traditional rhyme have cut-outs that get larger on each page as the animals the old lady swallows get bigger.	Children can explore growing patterns using nesting/stacking cups, nested gift boxes or nested Matryoshka dolls. They could investigate the growing patterns in log slices and in cross sections of an onion and also look at Kandinsky's circle paintings.

Books with patterns to discuss		Description	Developing the maths
	***Elmer the elephant*** David McKee 3-5 years https://youtu.be/TUepS9yGANQ	Elmer is a patchwork elephant. He gets fed-up with being different and decides to colour himself elephant colour. At the end of the story all of the elephants decorate themselves with colourful designs.	This book lends itself to discussions about *What is a pattern?* and *Is it a pattern?* In the picture of the herd of elephants on the last page there are lots of different designs, including some spatial and some repeating patterns. You could encourage children to create and describe their own patterned elephants.  You could also extend these activities by introducing Wilbur, a black and white cousin of Elmer's or investigating the patterns in patchwork fabrics.

	***My mum and dad make me laugh*** Nick Sharratt 3-5 years https://www.youtube.com/watch?v=sK45b3YYdio	Mum and Dad like spots and stripes and decorate their home, car and clothes with different patterns as well as noticing them whilst out and about.	This book includes lots of different spatial patterns e.g. on animals and in the environment. Most stripey patterns in the images are AB repeating patterns but there are also ABCD patterns in an umbrella and on Dad's T-shirt. There are also a few symmetrical patterns in the butterflies (reflection) and flower petals (rotation). There are opportunities to discuss the patterns e.g. *What colour is hidden?* or *Where would the next big spot go if the dress was longer?* Some patterns are more difficult to see e.g. the rug (as the stripes change size and are a complex pattern of colours), particularly where only a small amount of the pattern is shown (because there are not enough repeats to help us notice the pattern). It is more helpful to focus on how the patterns continue rather than just naming *stripes* and *spots*.
	***Pattern*** Henry Pluckrose 5-7 years https://www.youtube.com/watch?v=JexQqFYHEP8	This is a collection of photographs of different patterns in varied contexts, with some interesting questions, such as why there are patterns on car tyres and graters.	The many different kinds of spatial patterns prompt discussion of what is repeated and how. Some designs are called 'patterns', but have no repetition or regularity, raising the question of what is *not* a pattern. There is also the challenge to identify the repeat in a complex wallpaper pattern. 

	***Spotty, stripy, swirly*** Jane Brocke 5-7 years https://www.youtube.com/watch?v=Q88rb_XPU1g&t=279s	These photographs focus on decorative arrangements, including fabrics and buildings. It invites children to make their own patterns.	The great variety of created patterns (which are rather vaguely described) could prompt discussion about how the different arrangements are organised. Children could then make their own patterns with various objects or media,such as using pebbles or printing.
	***Wings, waves and webs: patterns in nature*** Robin Mitchell Cranfield 5-7 years https://www.youtube.com/watch?v=mLNdx_gN6aw	This is a beautifully presented book with simple illustrations of various patterns in nature and a small amount of text to encourage discussion. Each double page features a different type of pattern alongside a symbol.	As well as spots, stripes, spirals, mirror and radial symmetrical patterns, there are more unusual patterns such as ‘meanders’ and ‘cracks’. The book lends itself to discussions about *What is a pattern?* and *Is it a pattern?* For example, the illustrations for ‘spot patterns’ are a guinea fowl feather and a ladybird - *Are both of them patterns? Is a crack a pattern? Do the curves on a map of a real river actually form a pattern?* A nature table or a pattern-spotting walk are possible follow-up activities. The pattern symbols in the book could be replicated to label or sort objects and photographs. More ideas are in the Teaching Guide which is available on the author’s website.

Guidance

Sharing books with children is an important way of fostering positive attitudes to mathematics. Books are important in their own right and should be enjoyed for their own sake. It is useful for adults to be aware of the possible mathematics opportunities, and then use their own judgement when best to take advantage of these. There are a range of approaches for using picture books for maths with children. You may:

- read, see what children notice and discuss
- read the book a few times before discussing any maths
- pose a few questions, invitations to show fingers etc., but don't ruin the story!
- provide props for re-enactment, through small world or role play
- invite children to make up their own versions
- make up a game (e.g.making half a pattern on a pegboard for a friend to reflect)
- set a challenge (e.g.making their own patterns with leaves and twigs)

For more about patterns see:
https://earlymaths.org/pattern-links/
Including this video:
https://www.lboro.ac.uk/services/lumen/professional-development/pattern-awareness-in-early-years/

Further guidance, research and more books

- *Harnessing the power of story* - article by Cath Gripton and Helen Williams (2022)
- *How to use picture books -* advice & booklists - DREME (Development and Research in Early Mathematics Education)
- *Mathematics through stories* - website including comprehensive research list, as well as books for older children
- *Tips for read-alouds in math* - including research and extensive booklists, from Learning Trajectories
- *Exploring maths through stories and rhymes* - a helpful text for getting started (Janet Rees, 2019)