Summer Block 6

Make connections

White Rose MATHS

Teacher guidance

Key books

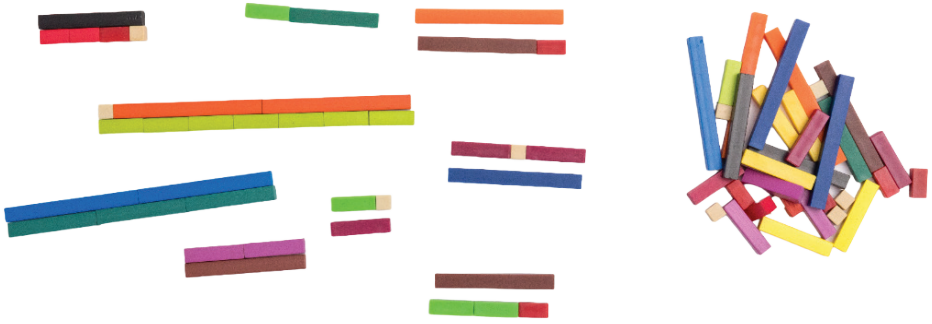
- *Billy's Bucket* by Kes Gray
- *Mr Gumpy's Outing* by John Burningham
- *How Many Legs?* by Kes Gray
- *Ants Rule: The Long and Short of it* by Bob Barner
- *Mr Archimedes' Bath* by Pamela Allen
- *Who Sank the Boat?* by Pamela Allen
- *You Can't Take an Elephant on the Bus* by Patricia Cleveland-Peck

Any previous books from past blocks can be re-explored and used to deepen concepts or to just enjoy!

Top tips

- Before using apparatus for problem-solving activities, ensure that children have had plenty of opportunities to explore resources and their possibilities.
- At this stage of the year, it is important to provide opportunities where adults can observe children showing their skills in maths through play in an independent fashion. Assessments should be mindful of children's independent confidence in maths and how skills can be used and applied.

Key resources



Small steps

Step 1	Deepen understanding
Step 2	Patterns and relationships

Deepen understanding

Notes and guidance

In this block, the focus is on making connections between all the aspects of maths that have been covered through the year. In this small step, we look at deepening this understanding through developing children's reasoning and problem-solving strategies.

Give children plenty of opportunities to engage in extended problem solving and develop their critical thinking skills. These problems can be linked to familiar stories, children's interests or real problems that arise as they play. Children may need support to carry out their plans and make adaptations. Ask children open-ended questions to explore their thinking. Afterwards, encourage children to review and discuss their strategies.

Rhymes

- *There's a Hole in My Bucket*

Books

- *Billy's Bucket* and *How Many Legs?* by Kes Gray
- *Mr Gumpy's Outing* by John Burningham
- *Who Sank the Boat?* by Pamela Allen

Key questions

- What can you see? Explain how you see it.
- What number story can you make?
- How many _____ do you have?
- What strategy did you use? Did it work?
- Why do you think that happened?
- How can we try again?

Possible sentence stems

- There are _____ altogether.
- I can see _____ here and _____ there.
- The _____ worked because...
- I used _____ because...

Links to the curriculum

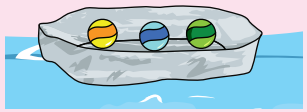
- Educational Programme for Maths – statutory framework

Deepen understanding

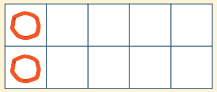
Adult-led learning

Provide children with materials such as tin foil or modelling clay to make boats. How many marbles will their boat hold while staying afloat?

Whose boat will hold the most marbles? Encourage children to adapt their design so that their boat holds more marbles.



After reading stories such as *Mr Gumpy's Outing* by John Burningham, provide children with a range of small-world animals and a container to use as a boat. Prompt children to take turns to close their eyes and collect an animal. How many legs does the animal have? Children represent the legs of the animal they have picked by drawing on a ten frame.



The first child to fill their ten frame is the winner. Encourage children to discuss what animal they need to win.

This can be extended by having to fill two ten frames.

Read stories such as *Billy's Bucket* by Kes Gray to use as a starting point for looking at comparison and number stories. Set up a small-world scene in a tuff tray and ask children to talk about what they can see.

What number stories can they make using different combinations? Prompt children to create their own scene and make up their own number stories.

Read stories such as *How Many Legs?* by Kes Gray which provide starting points for exploring counting problems. Ask children to work out how many legs there are in the different scenarios described in the story. The children will need to consider a wide variety of animals, including those with no legs.

Encourage the children to create their own nonsense scenarios in the style of the story and calculate how many legs there would be. These could be collated and made into a class *How Many?* book.

Patterns and relationships

Notes and guidance

In the second small step of this block on making connections, children should be given opportunities to explore and investigate relationships between numbers, shapes and patterns to further deepen their understanding and explore possibilities. Classroom resources such as number rods, pattern blocks and unit construction blocks are particularly good for exploring these patterns and relationships.

In addition to this, ensure that children are given the opportunity to extend these connections beyond mathematical apparatus and apply them to large-scale activities outside. Support children to enact scenarios where they have to think of more than just one answer, for example, if we all make slime, what do we need to do in order to take it home safely?

Allowing children to make decisions about what they would like to do and planning it out loud with supported scribing helps their planning and independence skills. Allow children time to discuss their plans and decisions and to think of all the possibilities.

Key questions

- How do you know?
- What do we need?
- How can we check?
- What can you see?
- Is there another answer?

Possible sentence stems

- I know my idea has worked because...
- To make a _____ I need _____.
- My plan is...
- I decided this because...

Books

- *Ants Rule: The Long and Short of it* by Bob Barner

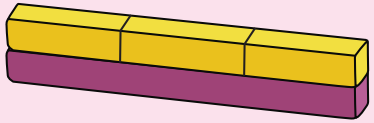
Links to the curriculum

- Educational programme for Maths – Statutory Framework

Patterns and relationships

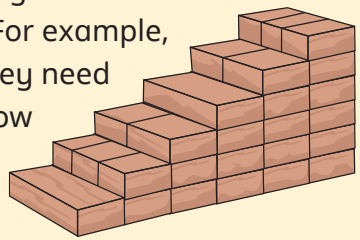
Adult-led learning

Show children a set of number rods. Ask children questions such as, "How many yellow blocks measure the same as one purple block?" What other relationships can they find? Can they find a block which is double the length of another block? How could they check?

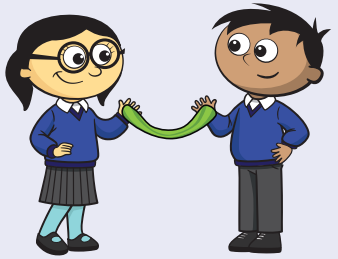


Encourage children to challenge a partner to work out the length of a given rod by experimenting with the remaining rods.

After reading stories such as *Ants Rule: The Long and Short of it* by Bob Barner, encourage children to access the construction area. Ask children to explore the different relationships they can find between various construction blocks. For example, how many short blocks do they need to match four long blocks? How could they use the blocks to make a set of stairs?

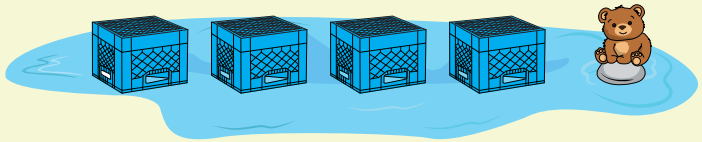


Allow children to plan (with adult support if needed) the last day of school. Encourage children to think about fun activities that they enjoy or something that they would like to do, for example, making slime.



Once children have made a plan, ask "What resources do you need to do these tasks? How long will each task take? Do we all need to work together or in small groups?"

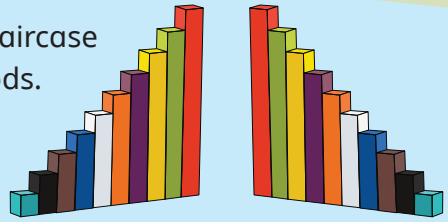
In the outdoor area, challenge children to solve problems on a large scale. For example, say "The playground is a crocodile-infested swamp! How can we rescue teddy without putting our feet on the ground?"



Other ideas could be building a shelter to keep everyone dry, choosing a vessel to fill with water, or keeping water in a vessel with holes in it.

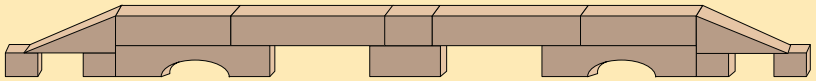
Continuous provision

Ask children to build a staircase pattern using number rods. Can they build it so that it goes up and then down? Can they build it so that it goes down and then up?



Encourage children to compare the different staircase patterns. What do they notice? They could also explore building staircase patterns that go up or down in two or three steps.

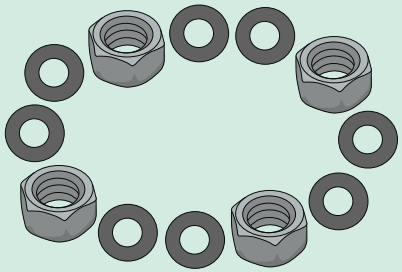
Show children photographs of bridges and prompt them to talk about what they notice. Encourage children to work together to build the longest bridge they can. How will they measure it? What is the strongest bridge they can build? How could they measure the strength of the bridge?



Encourage children to make their own cityscapes. Provide large rolls of paper with different-sized sponges and paint, or outdoor chalkboards and different-coloured chalk.

Prompt them to talk about their pictures, for example, discussing who has drawn short buildings or who has drawn tall buildings. Which house has the most windows?

Provide a range of natural materials and loose parts for children to create repeating patterns with. Encourage them to make different patterns which all have the same structure. Can they build a repeating pattern which continues around a circle?



Is there more than one way to describe this pattern? Where is the starting point?

End of block checkpoint

Checkpoint 1

After reading stories such as *You Can't Take an Elephant on the Bus* by Patricia Cleveland-Peck, encourage children to make their own vehicles for toy or small-world animals by planning out what they will need and using simple, non-standard units of measure.

Encourage children to test their vehicles and explain their designs. Why have they worked or not worked?

Checkpoint 2

Provide floor spots with numerals 0 to 10 displayed on them and a 6-sided dice with the words 'double', 'one more', 'one less', 'even', 'equal', and 'odd'.

Children stand on a number and roll the dice. Can children move to a floor spot that matches the instruction on the dice?

Checkpoint 3

In pairs, child 1 covers their eyes while child 2 selects two numeral cards and collects the corresponding number of cubes for each card.

Child 2 then combines all the cubes and turns over one of the numeral cards. Child 1 opens their eyes. Can they work out what numeral is on the hidden card using the cubes to help them? Children then swap roles.

Observe children as they play. Can they find the hidden number without counting out all the cubes?