numicon

Numicon At Home Kit
Activity Book
for Key Stage 1 (P2–P3)

OXFORD

Contents

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These activities are based on activities from *Numicon Number, Pattern and Calculating 1 Teaching Resource Handbook* and *Numicon Number, Pattern and Calculating 2 Teaching Resource Handbook.*

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Numicon at Home Kit for Key Stage I (P2–P3) children

This kit is designed for children and parents to enjoy learning about numbers, pattern and calculating at home. For 5–7 year olds.

The Numicon approach is designed to help your child see connections between numbers and number ideas

Children are usually very quick to notice patterns. Spotting and working with patterns is essential at all levels of mathematics.

The pattern in the Numicon Shapes helps children see the connections between numbers and to have a deep understanding of number ideas and calculation. The connections your child sees will provide a firm foundation for their mathematics understanding – particularly their mastery of mental arithmetic and early calculation.

The approach supports the early maths teaching your child will be meeting in school in Year I and Year 2

The practical activities in this book have been specially chosen to illustrate key mathematical ideas that you can share and enjoy with your children at home, to build up your children's mathematical understanding.

In this kit children will meet the big ideas of place value and equivalence. A secure understanding of these ideas is fundamental to all their later maths work. The Numicon approach encourages all children to visualize numbers and understand number relationships.

The Numicon approach is multi-sensory

Your child will learn through both seeing and feeling how Numicon Shape patterns connect with each other. By physically building constructions, making arrangements and patterns with Numicon Shapes and playing games with the feely bag, your child will experience both with their hands and eyes how numbers fit together and start to really understand how we use numbers in our calculations.

Numicon Shapes follow a system

You will see that the holes in the Numicon Shapes are arranged to correspond to the numbers I to I0. The pattern of holes for each number follows the same basic system of arranging holes 'in pairs'. So when Numicon Shapes are arranged in order, children can begin to notice important connections between numbers – that each number is 'one more' than the last, and 'one fewer' than the next, for example. Your child will be able to see with Numicon Shapes how two fours make eight, and three twos make six, etc. Later on your children will be able to visualize the number facts to ten which then support adding in groups of ten.

Notes

Although the activities at first glance may seem simple, through them children are meeting important mathematical ideas which lay the foundation for all their later understanding of number. These key ideas are explained briefly in the notes on each page.

Language

The mathematical language that your child can learn through each activity is signalled. It is important that you try to encourage the children to use this language as they are engaging in the activities. What's important here is that children are learning to use familiar words such as 'take away' in a mathematical context, where the meaning may be subtly different.

To check the meaning of maths words or terms you might not be familiar with, go to the Owl Maths education glossary.

Before you get started

The activities in this kit offer the potential for you to give a firm foundation to your child's understanding of number pattern, place value and early calculating. However, to get the most from this kit please take a few moments to read the guidance below.

The Numicon approach is part of your child's wider experience with numbers

It is important that your child has plenty of experience of and talk about maths such as counting, understanding number and the foundations of calculating alongside his or her play with the Numicon activities. Encourage your child to count anything and everything around him or her, including the holes in Numicon Shapes. Draw your child's attention to all the written numerals in the world around us – house numbers, page numbers, telephone numbers, road signs, birthday cards, sports scores, etc.

Children learn effectively by being involved and 'doing' mathematics

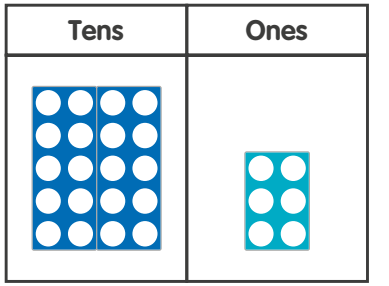
It is important not to try to rush your child through the Numicon activities in this pack. A slow approach is preferable in order to achieve secure understanding and firm foundations for later work.

In fact it is always helpful to be prepared to let your child experiment and to let them make up their own games. Encourage your child to talk about what they are doing, ask them to explain their thinking, can they work out answers in a different way? If your child is engrossed in his or her experiments with the Numicon resources, then you can be sure your child is learning something valuable.

Show by example

When you want to introduce your child to a new activity, show by your own example. Be seen to be interested and involved yourself. You can begin the activity and then let your child carry on or take over as they work out what you are doing. Teachers call this 'modelling'.

Don't put pressure on your child to advance too quickly; let them enjoy repeating the things they have learned over and over. Try not to let any concern of yours for your child's success create unhelpful pressure as this can put them off. We all enjoy repeating things we do well, and children are no exception – celebrate their successes and encourage them to repeat these often.



Let your child play with the Numicon Shapes independently, as well as gradually following the teaching activities

If an activity is fun and engaging it will help to promote positive emotions and if the activity is worked on as a family group it will promote positive family relationships, both of which are essential for well-being. The activities in this kit build on the work they will have been doing at school and that you are supporting your child with their learning.

On the following pages you will find several different teaching activities (games!) for you to follow with your child using the materials provided. There is more than a whole year's activity here. Your child will also enjoy playing with the resources independently and this type of exploratory play is important. Through their independent play children gain confidence and familiarity that will be important for them as activities become more advanced.

The activities in this kit offer the potential for you to give a firm foundation to your child's understanding of number, number pattern and calculation. However, to get the most from this kit please take a few moments to read the guidance below.

Work through the stages of activities in order

Allowing plenty of time for your child's independent play, work through the various stages of activities on the cards gradually, in order. Allow your child plenty of time to become confident with the type of activity on each card before moving on – repeating successes, over and over again, is very important for children's feelings of confidence and mastery over their world.

Encourage your child to develop a mental picture of the Numicon Shapes

The Numicon Shapes offer children a visual picture of numbers and their relationships. Playing some activities by touch encourages children to develop mental imagery. It is helpful to say to your child 'let your fingers be your eyes' and 'try to see the Numicon Shapes in your mind's eye'.

Help your child to count, as well

Counting things (anything and everything) is a very important accompaniment to these activities. Count with your child to begin with, and then gradually allow him or her to take over the counting more and more – your child learns from your example. Ask 'How many of these do we have?' frequently, and gradually encourage counting of bigger and bigger collections.

Keep the Zig-Zag Book on view

The Numicon Zig-Zag book is a very important background tool for continuing your child's work with the Numicon activities. It is double-sided with the number line on one side and the counting book on the other. The groups of objects in the counting book are linked to the appropriate Numicon Shape. The book should also be on display, close by and available whenever your child is working on Numicon activities with you. Best of all, the Numicon Zig-Zag Book should be kept with the collection of all your child's other books.

What's in the box

The Numicon Shapes

32 in total. These are designed to represent number ideas and how numbers relate to one another, in a way not provided by written numerals.

The Baseboard and Overlays

The 10 × 10 Baseboard, designed to hold the Numicon Shapes and Pegs, is used in many activities. The Picture Overlays fit on the Baseboard to make four different matching puzzles.

The Feely Bag

Important in our multi-sensory approach! When children 'feel' for a 'number' in the bag, they have to visualize Numicon Shape patterns, an important step in developing their own mental imagery of numbers.

The Pegs

The 52 Pegs come in only four colours, because children need to move beyond matching only by colour. The Pegs are useful for making patterns both by threading them onto the Threading Lace, or by arranging them on the Baseboard.
They can also be fitted into the holes of the Numicon Shapes and used to build number towers.

The Numeral Cards

The 0–10 laminated Numeral Cards are used in later activities once children are familiar with the Numicon Shapes.

The Zig-Zag Book

This plays an important part in your child's work with Numicon. You will see that it is a counting book on one side and on the other there is what teachers call a 'number line'.

Finding how many by grouping

Notes

As your child works through these activities, they will build the patterns for the Numicon Shapes to firmly establish that grouping is an efficient way to find out 'how many'. Their counting, estimating and understanding of place value is supported by the structure of the Numicon Shapes.

They will begin to understand that in our number system we can group in tens. This is important for later number work they will do at school.

Have ready

- Numicon Shapes or Printable Numicon Shapes, printed and cut out (link to printable Numicon Shapes)
- Numicon Pegs
- Numeral Cards
- A group of items: for example, seashells, buttons, cars or pasta shells
- A container of Ip coins (no more than 40)

Mathematical language

Count, how many, number names to 100, check, estimate, tens, ones, twos, fives, group, pattern, numeral

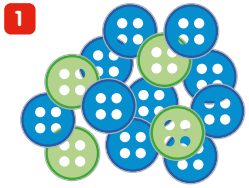
Activity 1: Let's find out how many by grouping objects

- Show a collection of up to 30 small objects to your child. 1
- Ask if they can guess how many items there are. Don't count at this stage, just estimate.
- Ask how they can find out how many there are (e.g. counting in ones, twos, fives... etc.)
- Encourage your child to group in tens.
- Match each group with Numicon Shapes. 2
- Finally, agree how many there are, say the number and write the number.
- How does the total compare with their estimate?

Activity 2: Finding how many Ip coins by grouping and counting in tens

- Show your child the container and tip out the Ip coins.
- Ask how many coins there might be in the container.
- Ask your child how they can find out how many coins there are.
- Encourage them to group the money into tens. Ip coins fit very nicely over the holes in a 10-shape. 3
- Finally, agree the amount, say the number and write the number.
- How close was their estimate?

1



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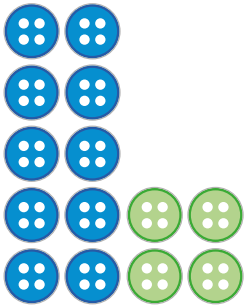

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20

Halves and quarters of wholes

Notes

These activities will build on your child's everyday experiences of partitioning wholes into halves and quarters, like sharing a cake between two people or a chocolate bar between four. It is essential children experience fractions initially in a practical way and can develop their understanding of a fraction being part of a whole when the whole is split into 'equal' parts. So, one half is one of two equal parts.

Have ready

- Numicon Shapes, or Printable Numicon Shapes, printed and cut out (link to printable Numicon Shapes)
- Numicon Pegs
- Sandwich loaf and sandwich filling
- Plates
- Blunt knife
- Felt tip pen

Mathematical language

Half, whole, quarter, part(s), equal parts

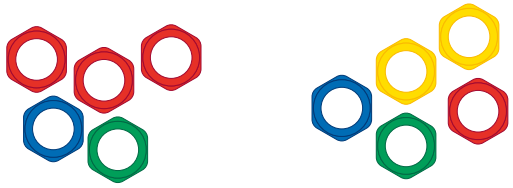
Activity 1: Halving collections of objects

- Show your child a collection of ten Pegs.
- Ask what you could do so you each get half of the Pegs. 1
- Show what this looks like using the Numicon Shapes. 2
- Discuss that each part must be of equal size or value.
- How many different ways are there of showing a half of ten? E.g. two 5-shapes, or a 5-shape and five 1-shapes etc (the 1-shapes could be in different positions).
- What about if there were 12 Pegs and 2 people or 12 Pegs and 4 people?

Activity 2: Cutting sandwiches into halves and quarters

- Ask your child to prepare a sandwich.
- What can they do to share the sandwich between two people so both get equal amounts?
- Can they show this using a 4-shape and a felt tip pen? (A water-based felt tip pen will wipe off the Shape afterwards.)
- What would they do if there were four people to share the sandwich with? 3
- Talk about two **equal** parts being 'halves' and four **equal** parts being 'quarters'.
- Ask how you could check that the parts are equal.
- Ask if they could do the same with a pizza or paper circles. 4

1



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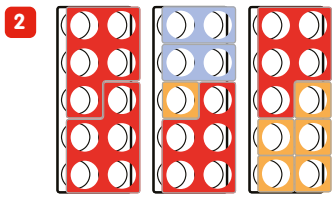

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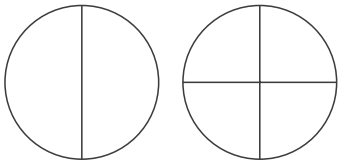


Recall of adding and subtracting facts within 10

Notes

When working on these activities, your child will start to have instant recognition of number. As children become familiar with the Numicon Shapes and patterns, they will associate them with adding and subtracting facts to 10.

You will also want to encourage them to understand and use the relationship between adding and subtracting. Eventually children will have a picture of the Numicon Shapes in their 'mind's eye', along with an instant recall of addition and subtraction facts such as 4 + 6 = 10.

Have ready

- Numicon Shapes or Printable Numicon Shapes, printed and cut out (link to printable Numicon Shapes)
- Numicon Pegs
- Feely Bag

Mathematical language

Add, total, compare, plus, take away, subtract, minus, equals, pattern

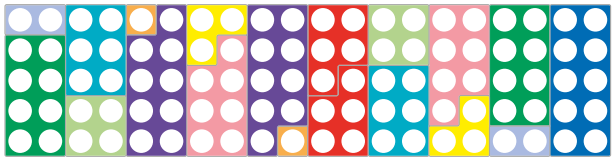
Activity 1: Recalling adding and subtracting facts for each number to 10

- Ask your child to set out all the pairs of Numicon Shapes that together equal 10 in any order. E.g. an 8-shape and a 2-shape. 1
- Practice:
  - saying an addition sentence for each pair, e.g. '8 add 2 equals 10'.
  - writing a number sentence to go with the shapes, e.g. 8 + 2 = 10.
- Start with one of the pairs of Shapes and take one of the Shapes away.
- Practice saying and writing what they have done, e.g.:
  - say, '10 take away 2 equals 8'.
  - write, 10 – 2 = 8.

Activity 2: What Shape is in the bag?

- Think of a pair of numbers that make 10, e.g. 6 + 4.
- Put a Numicon Shape in the Feely Bag that represents one of the numbers, e.g. a 6-shape.
- Show your child a 4-shape and ask them which Shape might be in your bag so that when the two Shapes are added they will make 10.
- Ask them to show that the 2 numbers make 10, say the addition sentence and write the number sentence.
- Repeat, focusing on subtraction, e.g. 'If I hold up a 10-shape and want to subtract 4 from it, what Shape is then in my bag?'

1



2-digit numbers and more ordering

Notes

These activities will build on children's earlier understanding of 2-digit numbers and continue to develop their understanding of grouping in tens. Children will practise building a number with the Numicon Shapes, writing the number using numerals and words. They will also look at one more and one less. Encourage your children to say '37 is 3 tens and 7 ones, or 3 lots of 10 and 7 ones'. This will reinforce their understanding of place value.

Have ready

- Numicon Shapes or Printable Numicon Shapes, printed and cut out (link to printable Numicon Shapes)
- Zig-Zag Book
- Feely Bag
- Printable template 1: Numeral Cards 20–30
- Printable template 2: Number Words Twenty To Thirty

Mathematical language

Number names 1-100, ordinal number names which denote order (first, second, third etc.), tens numbers, ones, one more, one less

Activity 1: Recognizing, saying and writing 2-digit numbers

- Place two 10-shapes and a 7-shape in the Feely Bag.
- Ask your child to put their hand in the bag or feel from the outside and say how many 10-shapes they can find.
- What else can they find?
- What number do the Numicon Shapes make?
- Take the Shapes out and check that they are correct.
- Say the number, write it as a 2-digit number and write it in words. You may want to use the number words from Printable template 2 to support your child. 1
- What would the number that is one more or one less than 27 look like?

Activity 2: Building, naming and labelling numbers 20 to 30 with Numicon Shapes

- Ask your child: what is the next number after 19? Can they build this number using the least amount of Numicon Shapes? 2
- Ask your child: what is the next number after 20? Can they build this number?
- What is the next number after 29 and can they make it by drawing around the Shapes? Work towards them making 30 using just three 10-shapes. 3
- Ask them what 31, 32, 33 would look like and ask what they notice about these numbers. (That there are three 10-shapes and one 1-shape, etc.)

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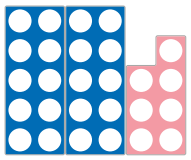
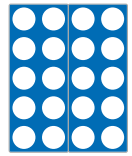


27 twenty seven

2



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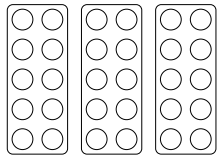
3



twenty	**twenty-one**	**twenty-two**	**twenty-three**	**twenty-four**	**twenty-five**
twenty-six	**twenty-seven**	**twenty-eight**	**twenty-nine**	**thirty**	
twenty	**twenty-one**	**twenty-two**	**twenty-three**	**twenty-four**	**twenty-five**
twenty-six	**twenty-seven**	**twenty-eight**	**twenty-nine**	**thirty**	

Printable template 2 Numeral Cards 20–30

20	21	22	23	24	25
26	27	28	29	30	
20	21	22	23	24	25
26	27	28	29	30	

Using the < and > symbols

Notes

These activities compare numbers and make comparisons between heights. Your child will develop their understanding of abstract symbols: < 'less than' and > 'greater than'. 1 They will have the opportunity to design and write their own number statements.

Have ready

- Toy figures of different heights
- Numicon Shapes or Printable Numicon Shapes, printed and cut out (link to printable Numicon Shapes)
- Feely Bag
- < and > symbols cut from Printable template 1: Words and Symbols for Calculating
- Printable template 2: Words for Comparing Measures

Mathematical language

More, greater, smaller, less

Activity 1: Comparing heights and introducing the < and > symbols

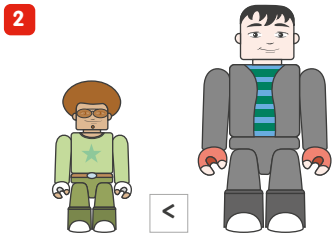
- Show your child two toy figures of differing heights.
- Compare their heights. Discuss which one is taller: if this one is taller, the other one is smaller.
- Introduce the > 'greater than' symbol which we can use to show which number or object is bigger.
- Ask your child to place the symbol cut from Printable template 1 between the figures.
- Introduce the < 'less than' symbol using the two figures to show which is smaller. 2
- Can your child find some examples of their own? They can also use the Words for Comparing Measures from Printable template 2 to help them.

Activity 2: Comparing Numicon Shapes using < and > symbols

- Place a set of Numicon Shapes 1–10 in the Feely Bag.
- Take two Shapes from the Bag and ask your child to say which one is bigger.
- Ask your child to place the > 'greater than' symbol between the two Shapes. 3
- Encourage them to tell a number story, e.g. the 9-shape is bigger / larger / greater than the 4-shape so the 4-shape is smaller than the 9-shape.
- Can they say the number sentence, 'nine is greater than four', and 'four is less than nine'?
- Can they write the number statement 9 > 4 and 4 < 9?

1

2



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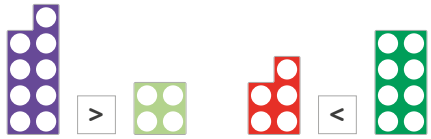

+	−	=	and	<	>
+	−	=	and	<	>

add	plus	take away
add	plus	take away

is longer than	**is shorter than**
is wider than	**is narrower than**
is taller than	**is shorter than**
is heavier than	**is lighter than**

Finding possibilities

Notes

These activities will give your child experience of finding more than one possibility. They will have the opportunity to investigate what is different and what is the same in the shapes and patterns they make. They will also experience trying to devise a system they can work with in order to find all possibilities.

Have ready

- Numicon Shapes or Printable Numicon Shapes, printed and cut out (link to printable Numicon Shapes)
- Numicon Pegs
- Numicon Baseboard
- Pencil

Mathematical language

Pattern, combination, similar, different, organize, systematic

Activity 1: How many different 2 × 2 squares can you make with Numicon Shapes?

- Ask your child to make a square with two holes across and two holes down on the Baseboard using the Numicon Shapes.
- How many different ways can they make this by using different combinations? (E.g. using 1-,2-,3-, and 4-shapes.) 1
- Ask them to record their answers by drawing around the Shapes onto a piece of paper.
- Ask if they have found them all.
- Discuss if different orientations of the Shapes count as one way or as more ways. 2

Activity 2: Exploring possible Numicon Shape patterns with 10 Pegs

- Using the 10-shape, ask your child to make three 10-shapes by drawing around a 10-shape with a pencil onto the Baseboard. (The Baseboard can be cleaned with a damp cloth.)
- Ask them to use all ten Pegs and arrange them to make a Numicon Shape onto each of the 10-shapes on the Baseboard. 3
- Explain they should use the same amount of Pegs and can make different patterns on the 10-shapes using those ten pegs.
- Encourage your child to record the different patterns they find onto paper, e.g. 2 + 3 + 5 = 10.
- How many different ways can they find of splitting the ten Pegs among the three 10-shapes?

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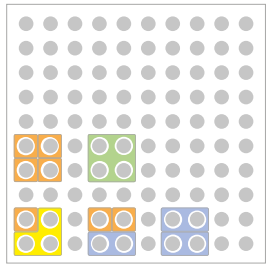

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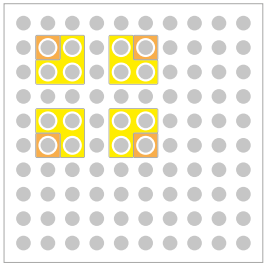

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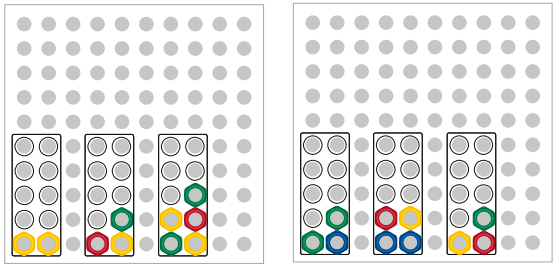


+	−	=	and	<	>
+	−	=	and	<	>

add	plus	take away
add	plus	take away

is longer than	is shorter than
is wider than	is narrower than
is taller than	is shorter than
is heavier than	is lighter than

2-digit numbers

Notes

In these activities, your child will consolidate their understanding of 2-digit numbers and place value. They will start to use multiples of 10 and use a tens and ones place value frame to help them connect ideas about place value.

Have ready

- Numicon Shapes or Printable Numicon Shapes, printed and cut out (link to printable Numicon Shapes)
- Numicon Pegs
- Printable template 1: Tens and Ones Frame

Mathematical language

Two-digit numbers, multiples of ten, tens and ones

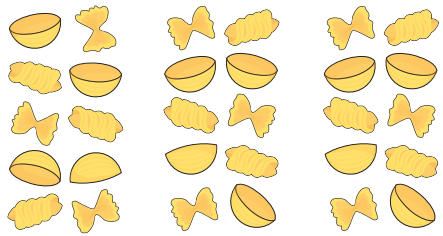
Activity 1: Multiples of 10

- Ask your child to make three 10-shape patterns with pasta shells or small objects. 1
- Ask them to record this number on paper by drawing the pattern, or drawing round the Numicon Shapes.
- Ask them to name the number they made.
- Ask them to say how many tens and how many ones there are.
- Ask them to write the number sentence: 3 tens = 30 ones and 30 = 3 tens.
- Try other examples.
- Discuss that these numbers are multiples of ten.
- Can they spot multiples of ten in the world around them? (E.g. speed signs, clock, cooker, number of tea bags in a box etc.)

Activity 2: Connecting grouping in tens with place value

- Ask your child to make 40 with the Numicon Pegs and then write the numeral.
- Talk about how many tens there are and the multiple of ten.
- Ask your child to record the number by drawing round the Shapes in the Tens and Ones Frame from Printable template 1 like this. 2
- Make more numbers up to 49.
- Talk about what happens when 1 more is added to 49. The extra 1 makes a ten which has to move across to the tens column because whole tens cannot stay in the ones column. 3

1



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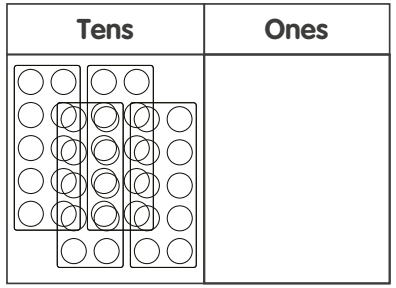

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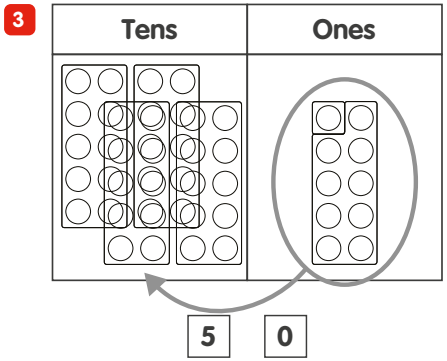


Tens	Ones

Exploring different patterns

Notes

These activities will provide opportunities for discussion about predicting pattern. Your child will be reminded about the idea of growing patterns and the ordered sequence of number and Numicon Shapes. They will predict what happens next and will establish links between pattern and number.

Have ready

- Numicon Shapes or Printable Numicon Shapes, printed and cut out (link to printable Numicon Shapes)
- Numicon Pegs
- Threading Laces
- Printable template 1: Numeral Cards 0–21

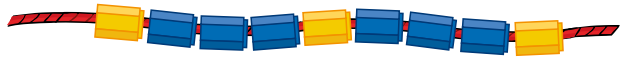
Mathematical language

Pattern, sequence, predict, what comes before?, what comes next?, growing pattern, increase, decrease

Activity 1: Repeating patterns with objects, Shapes and numerals

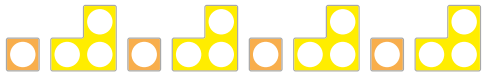
- Using the threading laces and Pegs, give your child an example of a repeating pattern. 1
- Ask your child to continue the pattern on the laces using the Pegs.
- What would the colour of the 10th or 20th Peg be?
- Can they represent this pattern using numbers? 2
- Can they represent this with Numicon Shapes? 3
- What would the 25th Numicon Shape be and why? They can draw around the Shapes if they need to check.

1



2 1 3 1 3

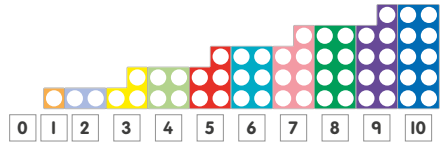
3



Activity 2: Patterns that grow in steps of 2

- Ask your child to use Numicon Shapes to build a pattern that grows in steps of one. 4
- Next ask them to build a pattern that grows in steps of two. They can start with any number. 5
- Discuss the patterns and label the Shapes with numeral cards cut from Printable template 1: Numeral Cards 0–21.

4



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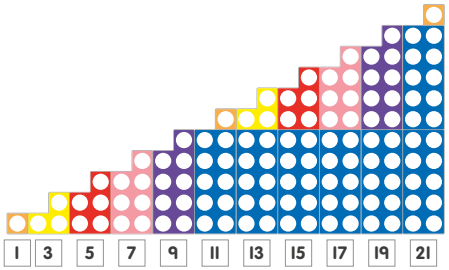
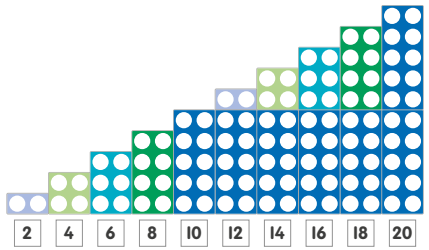




Printable template I Numeral Cards 0–21

0	1	2	3	4	5
6	7	8	9	10	11
12	13	14	15	16	17
18	19	20	21		

Adding and writing adding sentences

Notes

Children will develop their understanding of adding, combining quantities and increasing by adding more. Children will practise telling an adding number story and then illustrating in different ways, as number sentences and part-whole models.

Have ready

- Numicon Shapes or Printable Numicon Shapes, printed and cut out (link to printable Numicon Shapes)
- Feely Bag
- Story prompts such as toy cars or animals
- Numicon Pegs

Mathematical language

Add, plus, total, altogether, adding story, number sentence, part(s), part-whole

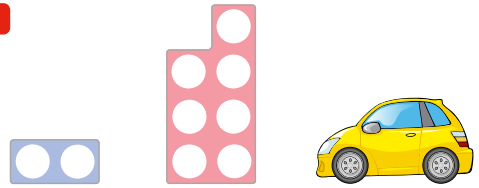
Activity 1: Creating, writing and reading adding number sentences

- Place Numicon Shapes and two or three story prompts into the Feely Bag.
- Ask your child to choose two Shapes and a story prompt from the Bag.
- Ask them to make up an addition story, write it as a number sentence and solve it.
  For example: There are seven cars in a car park, and then two more cars park drive into the car park. How many cars are there altogether? 1

Activity 2: Patterns that grow in steps of 2

- Your child is going to solve puzzles with three Numicon Shapes.
- Place two of each of the Shapes 1–10 in a Feely Bag.
- Take out a Shape, for example, a 4-shape.
- Ask, 'If this is the biggest Shape in the Bag, what could the other two Shapes be?'
- Ask them to record their answers with Shapes like the part-whole model below, where four is the whole and three and one are the two parts making up the whole. 2
- Repeat with other Shapes.

1



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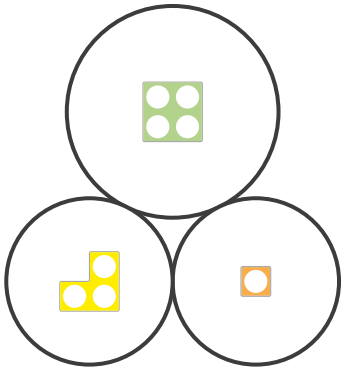


Subtracting and writing subtracting sentences

Notes

Your child will explore circumstances where subtraction is used in two different ways. They will be comparing numbers and subtracting to find the difference. They will be reducing numbers by subtracting. The Numicon Shapes will help children to visualize the relationship between the numbers they are working with. The activities will also help to develop their recall of number facts.

Have ready

- Numicon Shapes or Printable Numicon Shapes, printed and cut out (link to printable Numicon Shapes)
- Two bags (one Numicon Feely Bag and one other)
- A collection of objects e.g. toy cars, stickers or shells
- Printable template I: Subtracting Covers

Mathematical language

Subtract, compare, take away, difference, how many

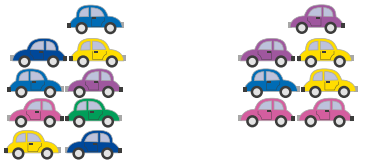
Activity I: Subtracting to find the 'difference'

- You and your child have a bag each and collect a number of small items, e.g. toy cars.
- Ask your child to find out who has collected more by comparing the two groups of items.
- Arrange each group of items into Numicon Shape patterns. 1
- Who has collected the most items and by how many?
- How do they know?
- Can your child write and say a number sentence for comparison? E.g. the difference between 9 and 7 is 2, and 9 − 7 = 2. 2

Activity 2: Subtracting by reducing

- Talk with your child about a supermarket having a special offer for money off the price of certain toys.
- A toy labelled £10 now has £3 off. Talk about what this means.
- Ask your child to show this with the Numicon Shapes and subtracting covers cut from Printable template I. 3
- Talk about the original price 'going down' or reducing by £3.
- Ask your child to say and write the number sentence 10 − 3 = 7.

1



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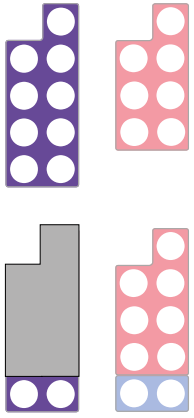

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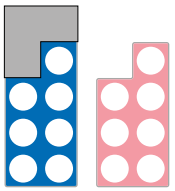
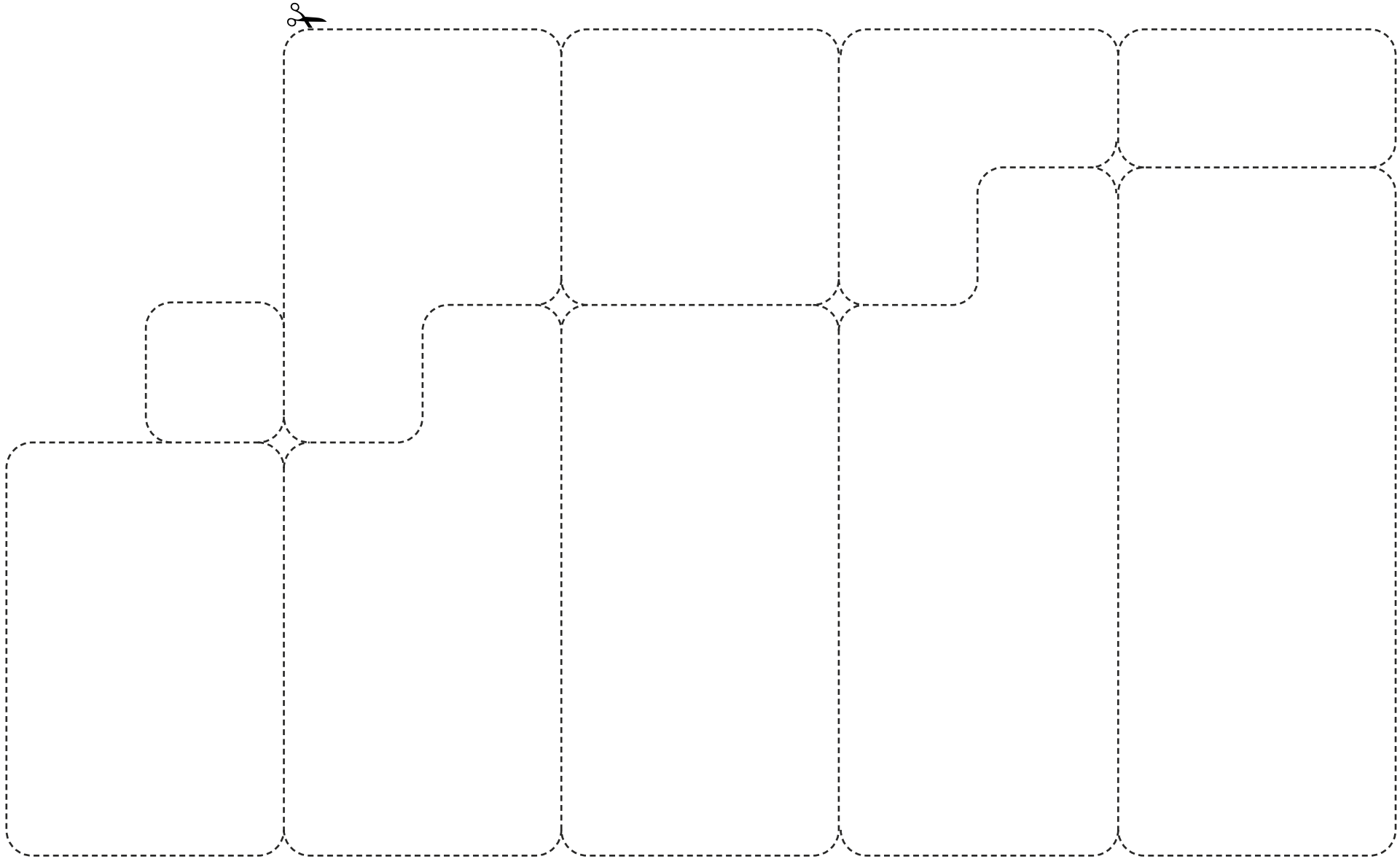


Printable template I Subtracting Covers



Odd and even

Notes

Through these activities, your child will consolidate and develop their understanding of odd and even numbers. Using the Numicon Shapes, they will start to reason about odds and evens beyond just looking at the numbers themselves. They will start to understand that an even number of objects can always be arranged in a pattern of 2s (or shared equally into two parts) with none left over, whereas an odd number cannot and always has an 'odd one' left over.

Have ready

- Numicon Shapes or Printable Numicon Shapes, printed and cut out (link to printable Numicon Shapes)
- Numicon Baseboard
- Numicon Pegs
- Pencil

Mathematical language

Odd, even, symmetry, line of symmetry, pattern, sequence

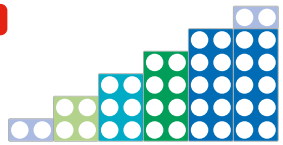
Activity 1: Exploring odd and even with Numicon Shapes

- Ask your child to sort a group of Numicon Shapes into odds and evens.
- What do they notice about the Shapes? (One group has sticky up bits; the other group has flat tops.)
- Ask them to arrange the Shapes in order of size.
- Now ask them to arrange the Shapes to make a sequence of even numbers, starting with the 2-shape. Can they say what the next two numbers would be? Can they continue the sequence? 1
- Repeat with four Shapes to make a sequence of odd numbers starting with a 1-shape.
- Ask your child to write the sequence using numerals. Now continue the sequence. What do they notice about the last digit in a sequence of odd and even numbers? (Repeating 0,2,4,6,8, and 1,3,5,7,9.) 2

Activity 2: Symmetrical patterns

- Draw a vertical line down the middle of the Baseboard with a pencil to represent the mirror line. The pencil mark will rub off the board easily afterwards.
- Ask your child to build a pattern using Pegs on one side of the line.
- How many Pegs of each colour have they used?
- Then ask them to copy the pattern on the other side of the line to make it symmetrical. 3
- How many Pegs of each colour have they used all together? What do they notice?
- Repeat using a horizontal line of symmetry.

1



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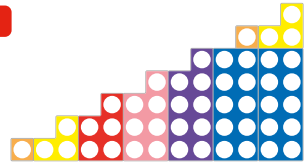

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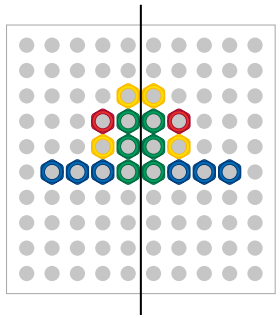


Rounding

Notes

In these activities, your child is introduced to rounding and will work on the idea of a number being near a 'target' number (multiple of 10). They will explore what halfway means and start to think about rounding numbers, including when to round up and when to round down.

Have ready

- Numicon Shapes or Printable Numicon Shapes, printed and cut out (link to printable Numicon Shapes)
- Numicon Pegs
- Printable template 1: Blank Number Line

Mathematical language

Estimate, guess, closer, nearly, compare, round up, round down, halfway

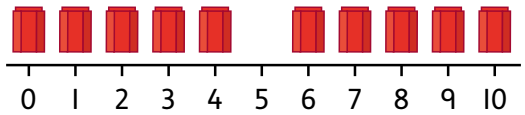
Activity 1: Finding halfway between multiples of 10

- Ask your child how they would find halfway between 0 and 10.
- Show what this looks like on a number line, using Printable template 1 with 0–10 marked on the increments. With a peg in each hand, start by placing a peg on 0 and 10 and work inwards to reveal 5 as halfway. 1
- Repeat to find halfway between 10 and 20, 20 and 30 etc. You can extend the printed number line for this.
- Establish that they are not finding half **of** 20 or half **of** 30 but are finding **halfway** between these numbers.
- Keep a record of all the numbers that are halfway, 5, 15, 25 etc.
- What does your child notice?
- Can they predict what number would be between two given numbers? For example, the number that is halfway between 20 and 30. 2

Activity 2: Introducing rounding to the nearest multiple of 10

- Ask your child to consider other numbers between 10 and 20 except 15.
- Say, 'let's look at 14'.
- Set out two 10-shapes and use the Pegs to build 14 by slotting 14 Pegs into the holes, filling the 10-shape and making a 4-shape. 3
- Is 14 closer to 10 or 20 and why?
- Which numbers are closer to 10?
- Which numbers are closer to 20?
- Repeat with numbers between 20 and 30, draw round the Shapes to make a number line up to 30 and 40 etc.

1



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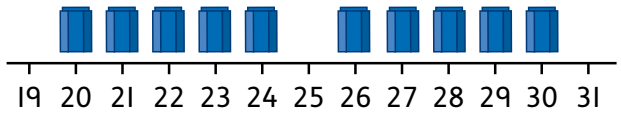

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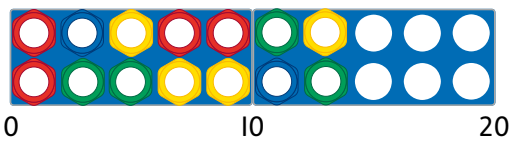
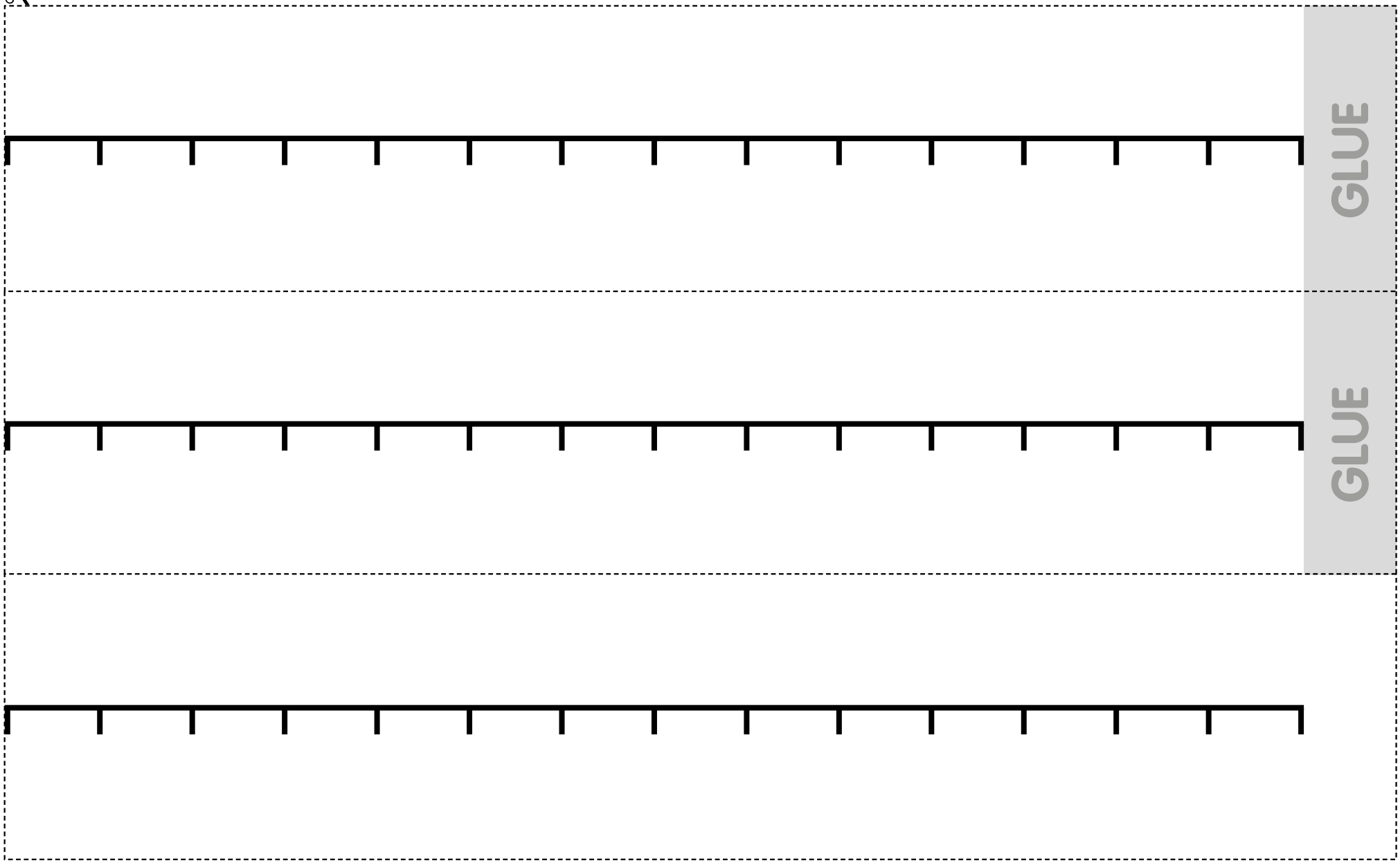


Printable template I Blank Number Line



Comparing and ordering numbers to 100

Notes

These activities focus on making comparisons between numbers. Your child will compare and order numbers and use numbers in the context of money. Comparing and ordering with Numicon Shapes will help your child understand place value, money and associated coins.

Have ready

- Numicon Shapes or Printable Numicon Shapes, printed and cut out (link to printable Numicon Shapes)
- Numicon Pegs
- Numicon Baseboard
- 1p, 2p, 5p, 10p, 20p, 50p and £1 coins
- Pasta shells

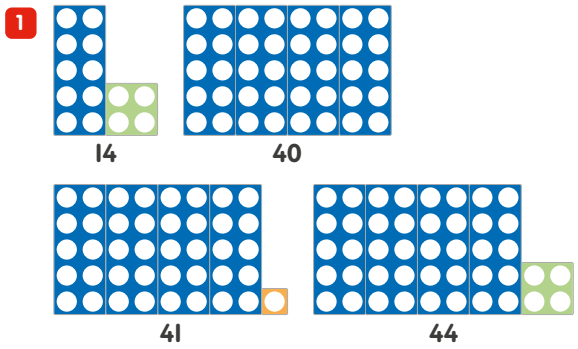
Mathematical Language

Ones, pence, pound, 1p, 2p, tens, 50p, 10p, 5p, more than, less than, larger, greater, bigger, smaller, fewer

Activity 1: Comparing and ordering more than 2 numbers in the range of 0–100

- Say the numbers 40, 14, 41, 44 and ask your child to write them down in numerals.
- Ask them to look at the numbers and write them in order starting with the smallest.
- Ask them to check their answer by building the numbers and drawing around Numicon Shapes to record the sequence of number.
- Encourage them to talk about the numbers e.g. 44 is four lots of 10 and 4 ones. 1

1



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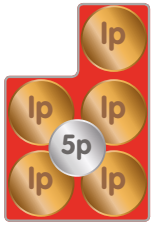

Activity 2: Comparing and ordering with money

- Give your child some coins of different values and ask them to put the coins in any order they choose. They may choose to order in size, size and colour or value.
- Ask your child to build each amount they made by drawing around Numicon Shapes, or putting Numicon Pegs or pasta shells into a Numicon Shape pattern.
- What do they notice? (E.g. a 5p piece is smaller in size than a 1p but the Numicon Shape representing 5 pennies is larger than the Shape representing 1 penny.) 2
- Use the Pegs to reinforce how many pennies are in 5p, 10p, 20p etc.
- Ask your child to think of an amount and build it with the Shapes.
- Share stories with your child where children are given amounts such as 24p and 42p, and ask who has the most and why? How do they know?
- Ask your child how many different ways they could make 10p, if they had an unlimited amount of all the different coins. Draw around Shapes to help.