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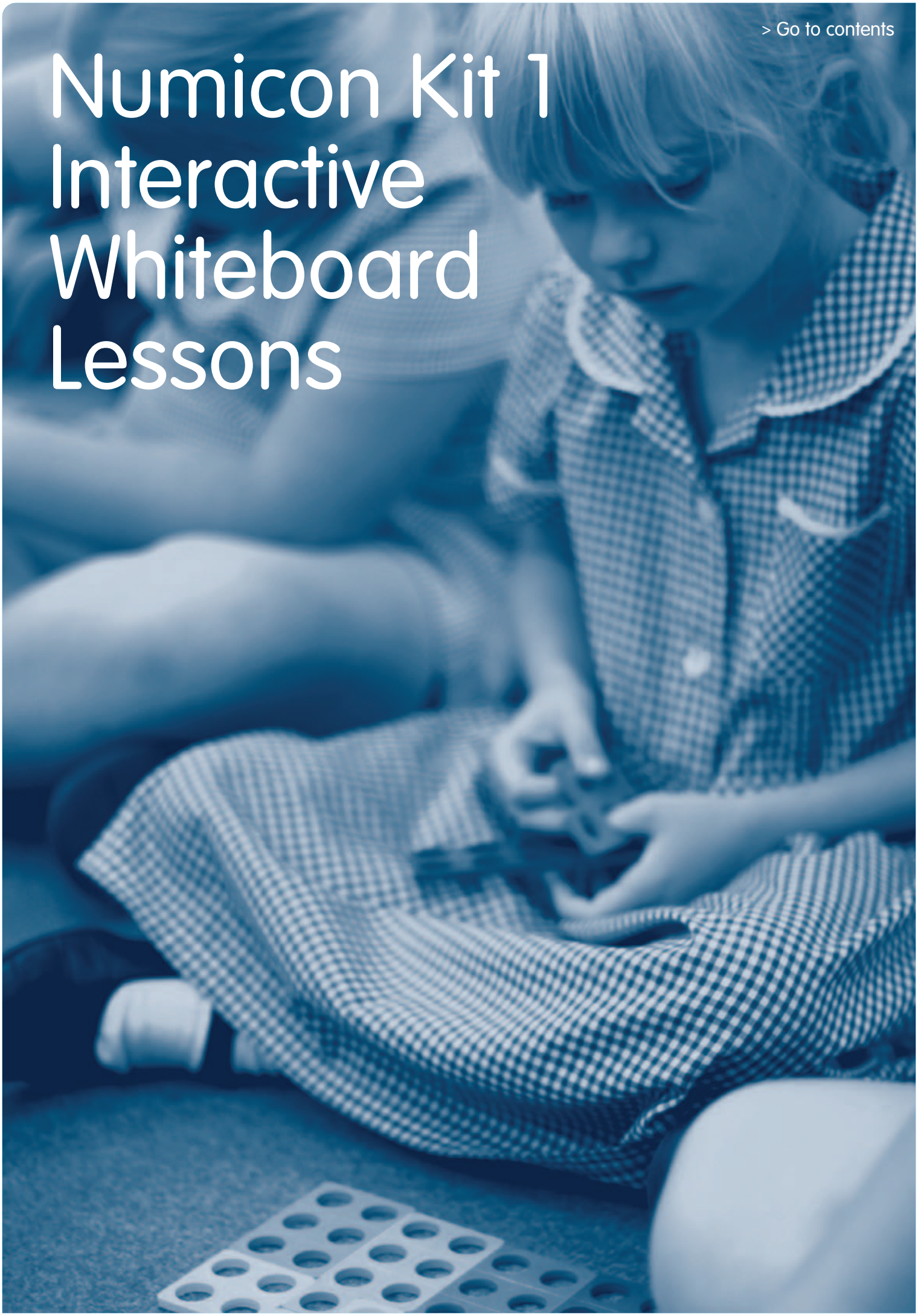
Numicon Kit 1 Interactive Whiteboard Lessons



These lessons are designed to help teachers get started with using the Numicon images and models for maths interactive software. Numicon visual imagery is structured to represent number and number relationships. The lessons show how to use the images to give children a picture of arithmetic operations and mental arithmetic strategies.

The lessons address aspects of the English National Curriculum Programme of Study for Mathematics in Key Stage 1. These lessons are the second of three sets of ten lessons, Numicon Foundation, Numicon Kit 1 and Numicon Kit 2. The lessons are not designed as a complete teaching programme although there is progression in each set.

Each lesson uses Numicon images or number rods with other models to put across the main teaching points and to demonstrate practical activities. Pupils can then follow up the whiteboard lesson in practical work to maintain a multi-sensory approach.

How to use this document

This pdf is interactive and allows users to navigate through the document without scrolling. Use the links at the top of each page to move on to the next lesson, go back to the previous lesson and come back to this page. You can also go straight any lesson by using the links in the list below.

Aim: To build repeating patterns using two or more elements

Lesson

Main screen without Numicon shapes

Select

Menu: Objects: Pictures: select fruit menu by clicking on apple

Activity

- ➔ Choose two types of fruit
- ➔ Put three of each type on screen, see figure 1
- ➔ Arrange into a repeating pattern e.g. orange, apple, orange, apple, see figure 2
- ➔ Ask children which fruit comes next each time. Note: Enable greater focus by clearing picture menu whilst arranging objects into patterns
- ➔ Repeat with different fruits and extend using three types of fruit or different numbers of each.

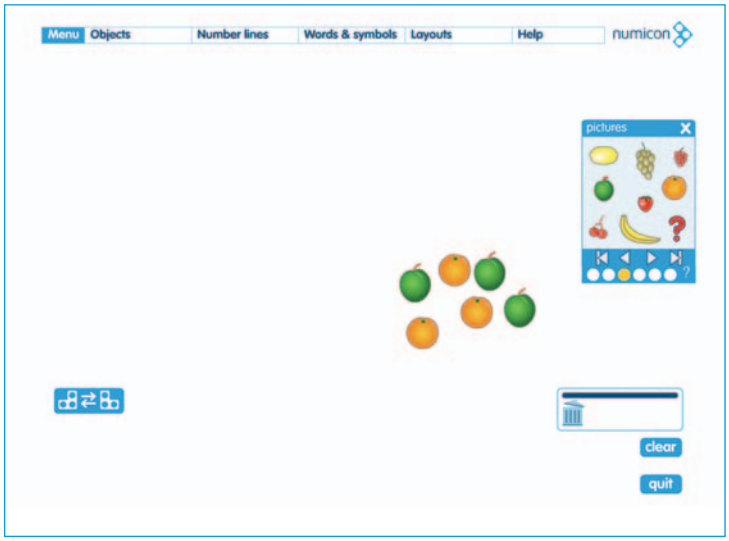


Figure 1

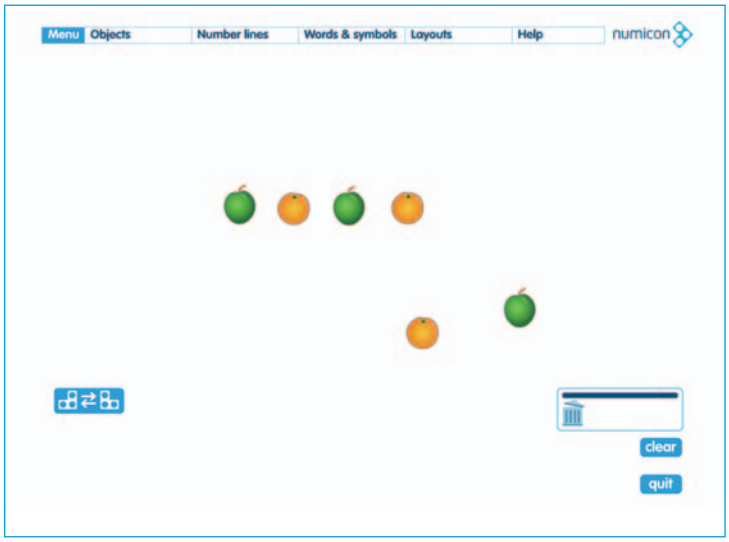


Figure 2

Lesson extension

Main screen without Numicon shapes

Activity

- ➔ From the objects menu develop and extend understanding using Numicon shapes, number rods, pegs, shapes and other pictures from the objects drop down menu.

Mathematical language

Repeat, next, before, after, predict, pattern

Reference

For further ideas refer to Numicon Kit 1, Using Pattern 1A and 1B.

Aims: To practise estimating and counting; to relate counting to the number line; to relate counting to Numicon shapes

Lesson

Main screen with Numicon shapes

Select

Menu: Objects: Shapes: Stars
Menu: Number lines: Numerals

Activity

- ➔ Put up to 20 stars on the screen, see figure 1
- ➔ Ask children to estimate how many
- ➔ Count by placing stars along number line, see figure 2, noting the last number in the count
- ➔ Ask children to select the Numicon shapes for the last number in the count
- ➔ Arrange the stars onto holes in the Numicon shapes
- ➔ Drag the Numicon shapes to the side to reveal the stars arranged in the Numicon patterns, see figure 3
- ➔ Repeat with different shapes or pegs or pictures.

Lesson extension

Main screen with Numicon shapes

Select

Menu: Objects: Shapes: Stars
Menu: Number lines: Numerals

Activity

- ➔ Work with higher numbers of objects.

Mathematical language

Number names, how many, estimate, check, count, less, more

Reference

For further ideas refer to Numicon Kit 1, Numbers and the number system 1A and 1B.

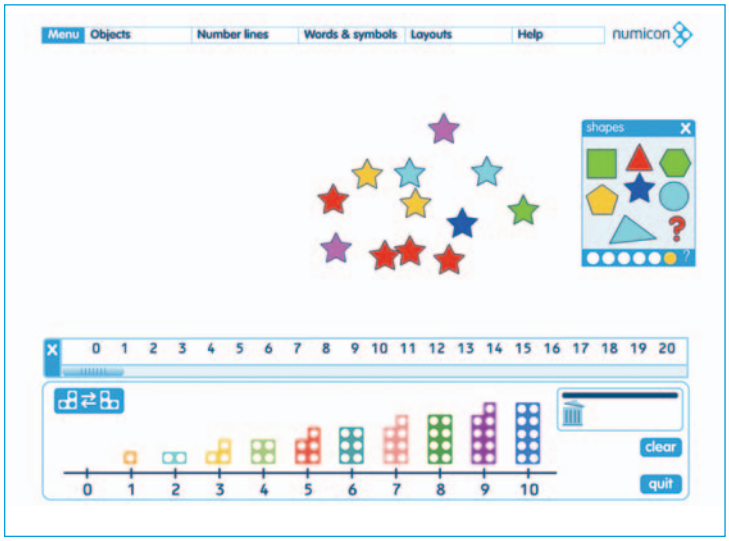


Figure 1

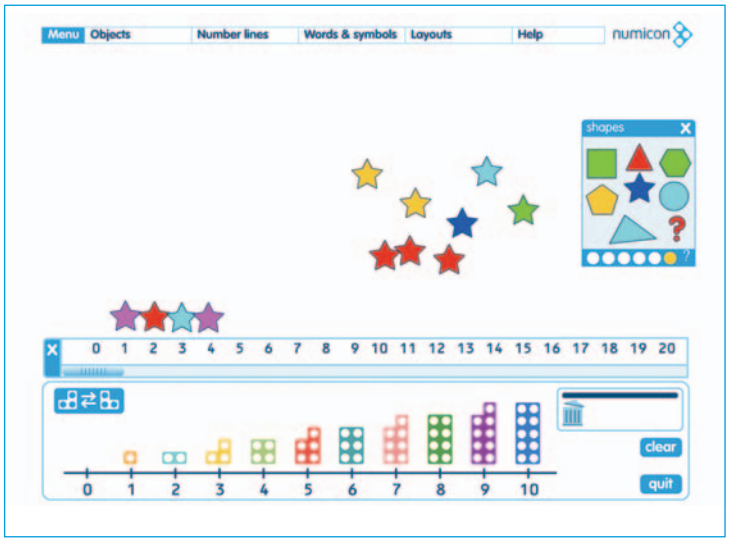


Figure 2

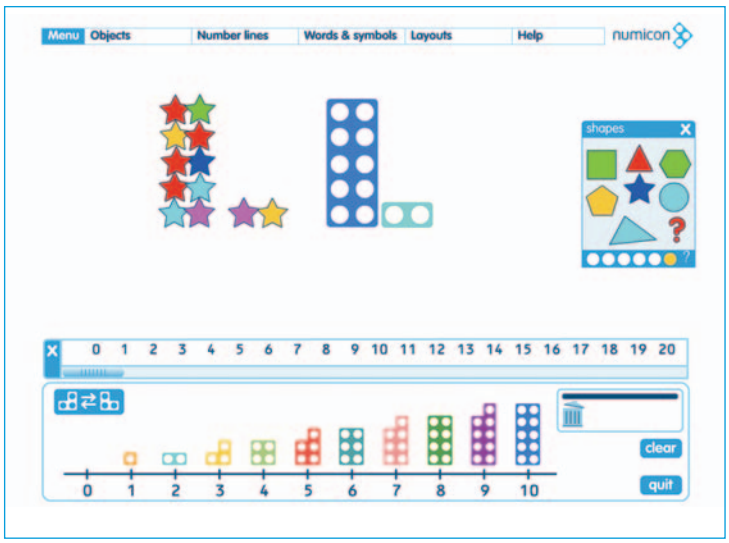


Figure 3

Aim: To develop language of addition; to learn to add without counting.

Lesson

Main screen with Numicon shapes

Select

Menu: Words & symbols: Words: and, add, equals

Activity

- ➔ Select a 4-shape, a 3-shape, add, and and equals
- ➔ Move the shapes together on the screen, see figure 1
- ➔ Ask children if they can see the total, select the 7-shape to check
- ➔ Say clearly '4 and 3 equals 7'
- ➔ Introduce the word 'add' and repeat saying clearly ' 4 add 3 equals 7'
- ➔ Select numerals 4, 3, 7
- ➔ Show the addition sentence with words and numerals, see figure 2
- ➔ Repeat with many other additions totalling 10 or less.

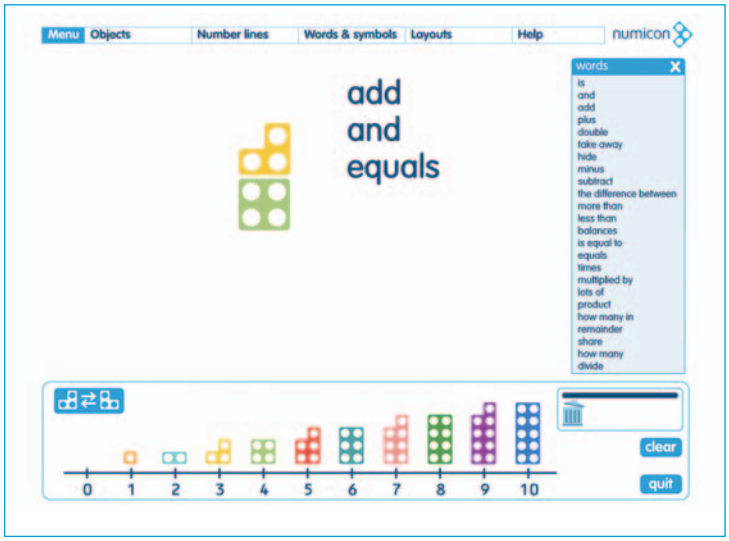


Figure 1

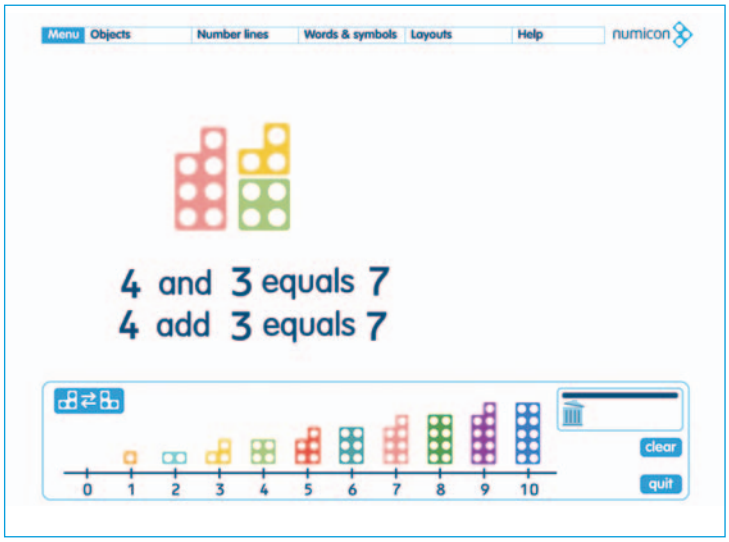


Figure 2

Lesson extension

Main screen with Numicon shapes

Select

Menu: Words & symbols: Words: and, add, equals

Activity

- ➔ Connect with real world by setting addition problems with pictures from the objects menu arranged into Numicon patterns, encouraging understanding that the addition is solved without counting.

Mathematical language

Add, and, altogether, number sentence, equals, how many

Reference

For further ideas refer to Numicon Kit 1, Calculating 1A and 1B.

Aim: To develop understanding of equivalence

Lesson

Main screen with Numicon shapes

Select

Menu: Objects: Balances
Menu: Words & symbols: Words, signs

Activity

- ➔ Show the balances on the screen and select the word 'balances' and the = sign, see figure 1
- ➔ Select the 5-shape and 2-shape and put in one side of the balance, explain the word 'balances' and place it under the centre of the balances, see figure 2
- ➔ Ask children if they can see which shape is needed to balance 5 and 2
- ➔ Click and move the 8-shape to the empty pan
- ➔ Select the equals sign and explain that this sign can be used instead of the word 'balances', see figure 3
- ➔ Using the balances and equal sign repeat with many different examples.

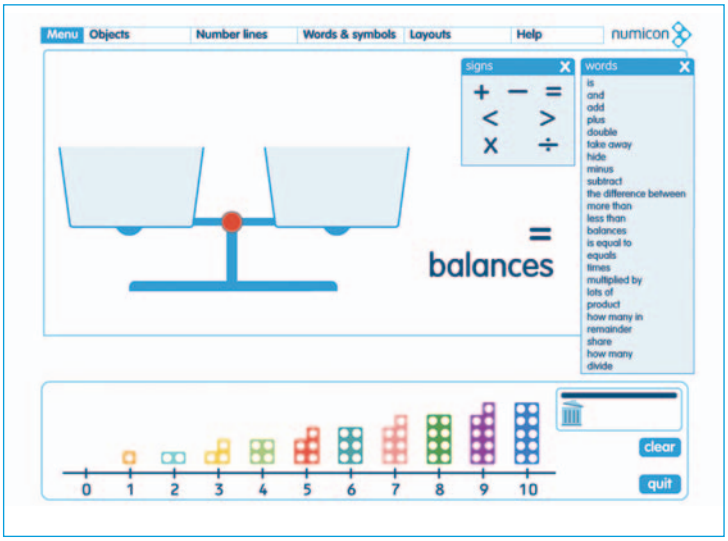


Figure 1

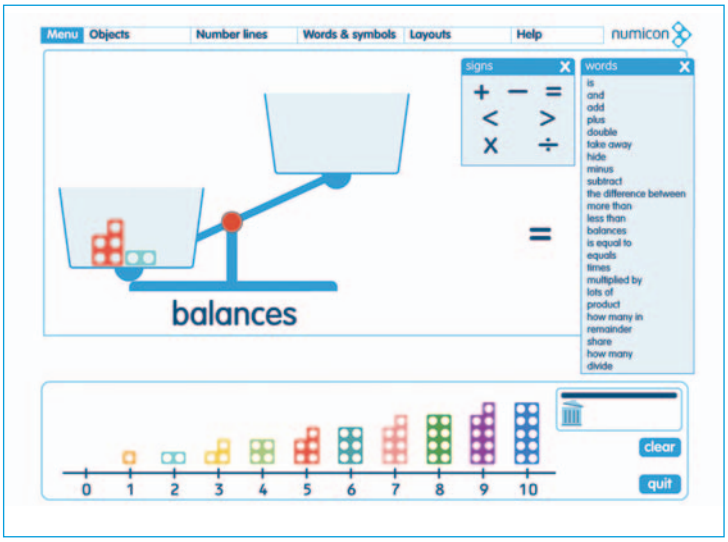


Figure 2

Lesson extension

Main screen with Numicon shapes

Select

Menu: Objects: Balances.
Menu: Words & symbols: Words, signs

Activity

- ➔ Choose a number within 10, ask children to use two of its addition facts in the balance to show equivalence, e.g. 5 + 3 = 4 + 4.

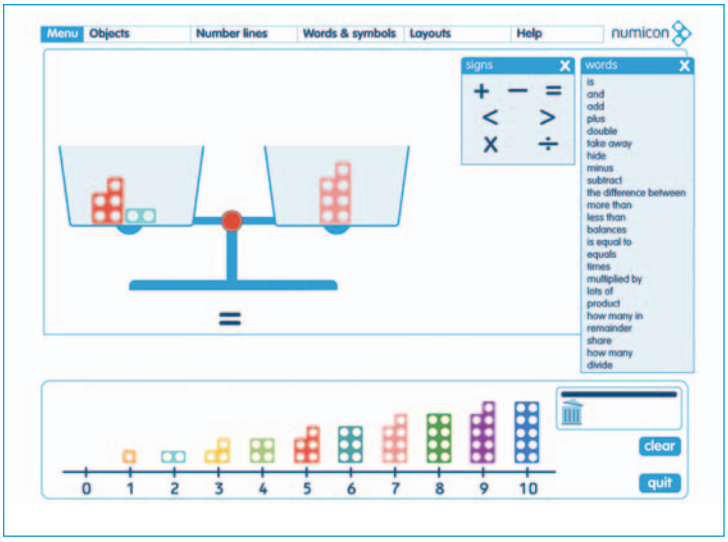


Figure 3

Mathematical language

More, larger, bigger, greater, fewer, smaller, less, balances, equals, sign, between

Reference

For further ideas refer to Numicon Kit 1, Calculating 2A and 2B.

Aim: To relate one more to pattern in addition

Lesson

Main screen with Numicon shapes

Activity

- ➔ Select one of each Numicon shape in order, see figure 1
- ➔ Select one extra 1-shape
- ➔ Add the extra 1-shape to each shape in turn, beginning with 1, see figure 2
- ➔ Everyone says the resulting addition each time, i.e. '1 add 1 equals 2'. '2 add 1 equals 3' etc.

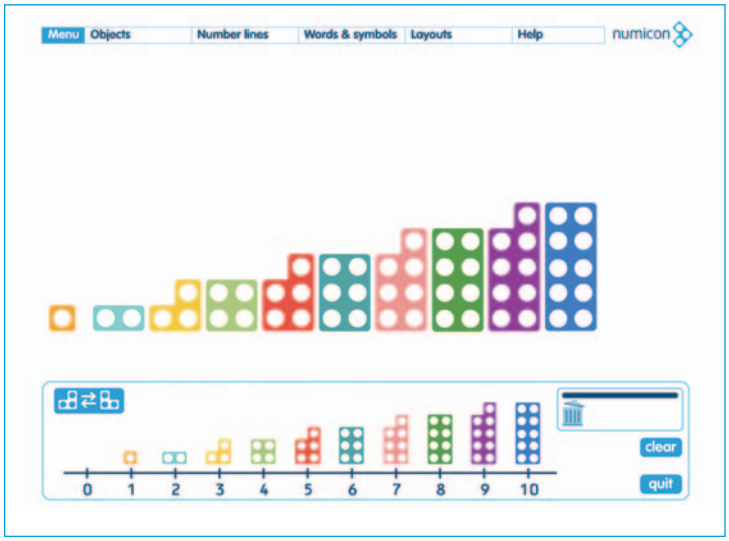


Figure 1

Lesson extension

Main screen with Numicon shapes

Select

Menu: Number lines: Numerals

Activity

- ➔ Choose numbers within the children's counting range at random from the Numeral number line and ask the children to say what one more would be

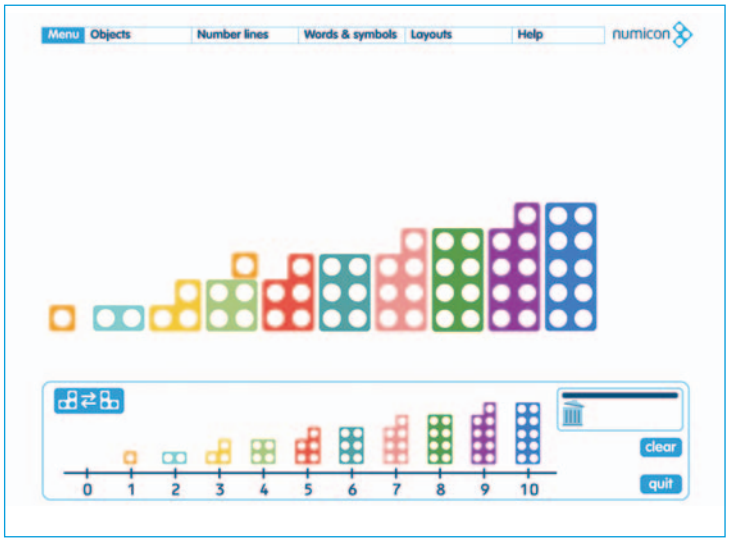


Figure 2

Mathematical language

One more, next, the same, equals, after, pattern

Reference

For further ideas refer to Numicon Kit 1, Calculating 3A.

Aim: To develop the language of subtraction in word problems

Lesson

Main screen with Numicon shapes

Select

Menu: Objects: pictures: vehicles
Menu: Objects: cover

Activity

- ➔ Select a set of less than 10 vehicles
- ➔ Arrange the vehicles into a Numicon pattern, see figure 1
- ➔ Make up a subtraction story, for example 'There were six cars in the car park, three drove away'
- ➔ Ask children how many would then be left
- ➔ Check the answer by clearing three cars and compare with the remaining Numicon pattern, see figure 2
- ➔ Demonstrate the subtraction with the Numicon shapes and the cover, see figure 3 (Refer to Foundation Whiteboard Activity 9).

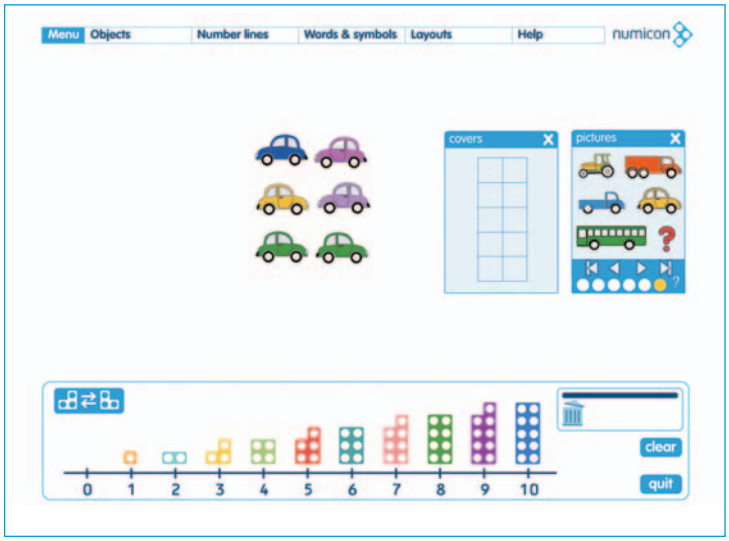


Figure 1

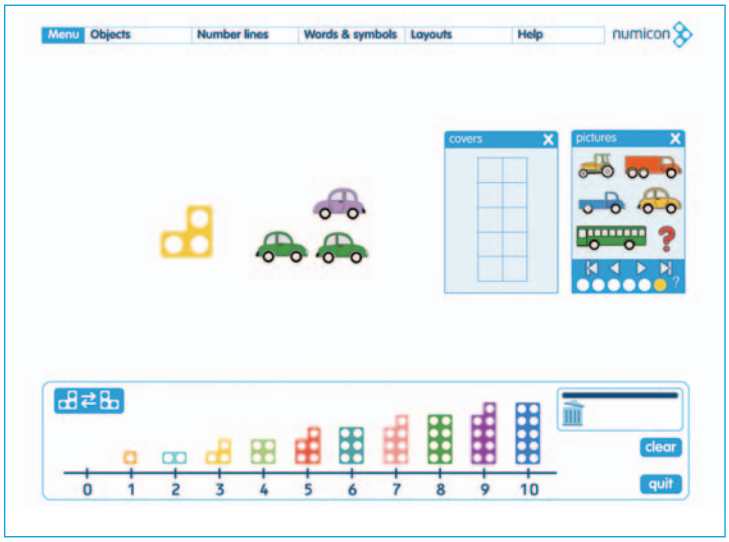


Figure 2

Lesson extension

Main screen with Numicon shapes

Select

Menu: Objects: pictures: vehicles
Menu: Objects: cover

Activity

- ➔ Show a subtraction using the Numicon shapes and cover and ask children to make up their own subtraction story.

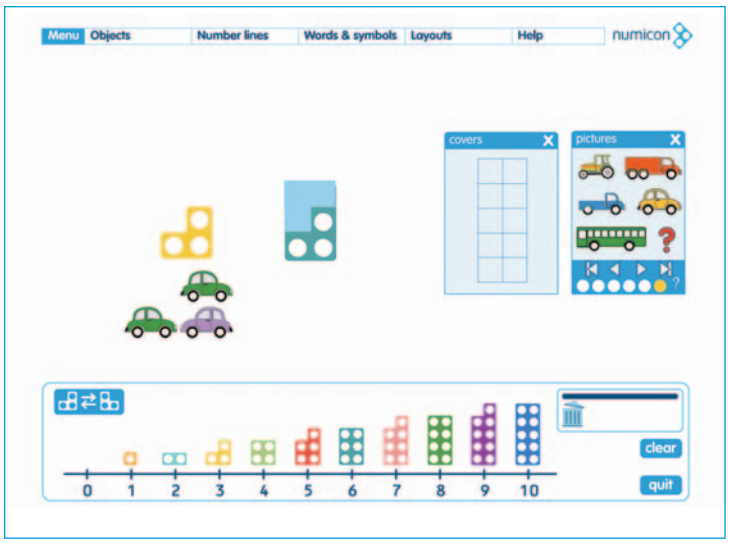


Figure 3

Mathematical language

Take away, subtract, minus, equals, leave

Reference

For further ideas refer to Numicon Kit 1, Calculating 3A.

Aims: To reinforce understanding that arranging cournters into patterns and groups is a more efficient way than counting to find out 'how many'; to extend counting range; to introduce place value

Lesson

Main screen with Numicon shapes

Select

Menu: Objects: pegs
Menu: Number lines: Numerals

Activity

- ➔ Select a number of less than 30 pegs, see figure 1
- ➔ Ask children to estimate how many there are
- ➔ Arrange the pegs into Numicon patterns, see figure 2
- ➔ Check the answer by putting Numicon shapes at the side
- ➔ Ask children to find the numeral, see figure 3
- ➔ Repeat with other numbers and vary using shapes and pictures from Objects Menu.

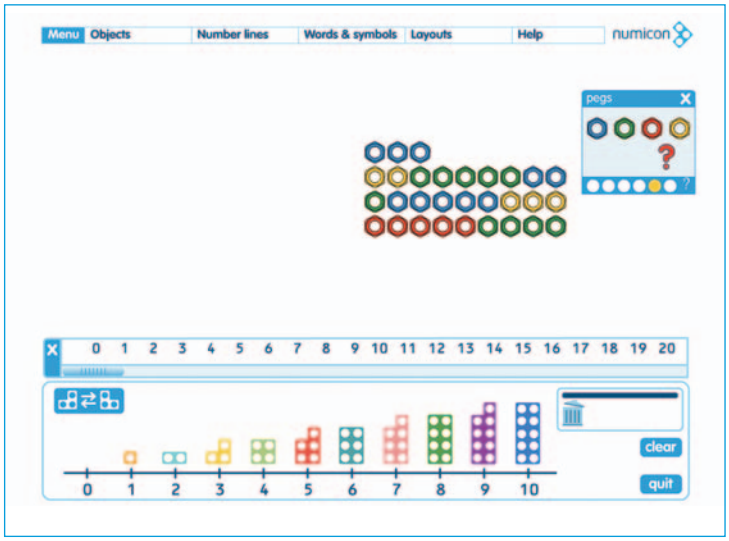


Figure 1

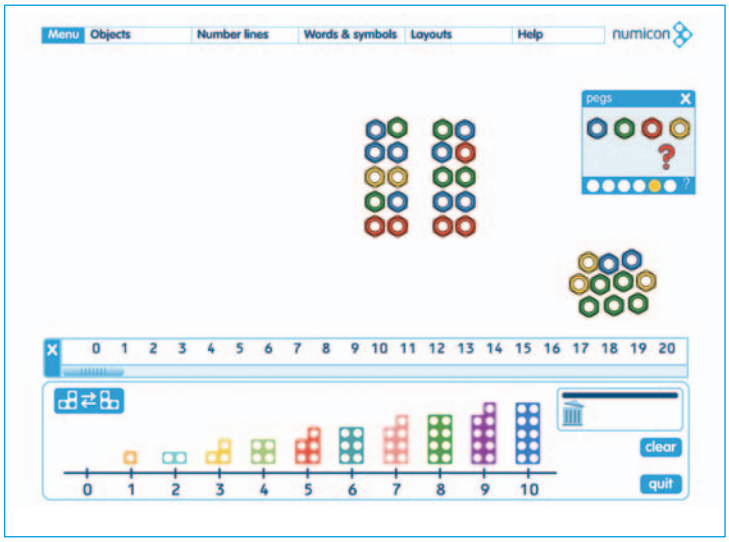


Figure 2

Lesson extension

Main screen with Numicon shapes

Select

Menu: Objects: pegs
Menu: Number lines: Numerals

Activity

- ➔ Use higher numbers as children's counting range extends.

Mathematical language

Number names, count, how many, check, estimate, tens, units, pattern

Reference

For further ideas refer to Numicon Kit 1, Numbers and the Number System 3A and 3B.

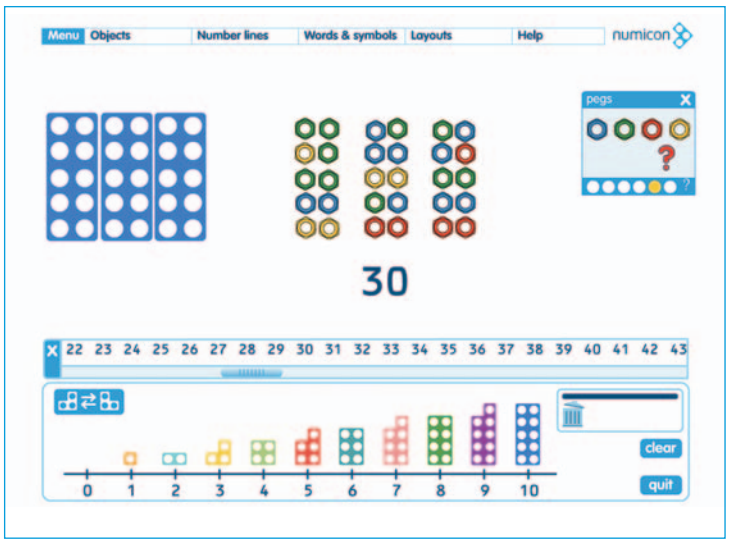


Figure 3

Aim: To understand the values of coins by relating these to Numicon patterns

Lesson

Main screen with Numicon shapes

Select

Menu: Objects: Coins

Activity

- ➔ Select Numicon shapes 1-5 and spread them out
- ➔ Click on the 1p coin and look at it carefully, pointing out the numeral 1 on it, see figure 1
- ➔ Ask children to which Numicon shape they could match it
- ➔ Repeat with 2p coin and then 5p coin, see figure 2
- ➔ Ask children how they could make 3p and 4p with the coins, explore different combinations, see figure 3
- ➔ Find different ways of making 5p.

Lesson extension

Main screen with Numicon shapes

Select

Menu: Objects: Coins

Activity

- ➔ Introduce 10p coin and make other combinations of coins to find ways of making 10p.

Mathematical language

Money, coin, penny, pence, make, exchange

Reference

For further ideas refer to Numicon Kit 1, Calculating 3B.

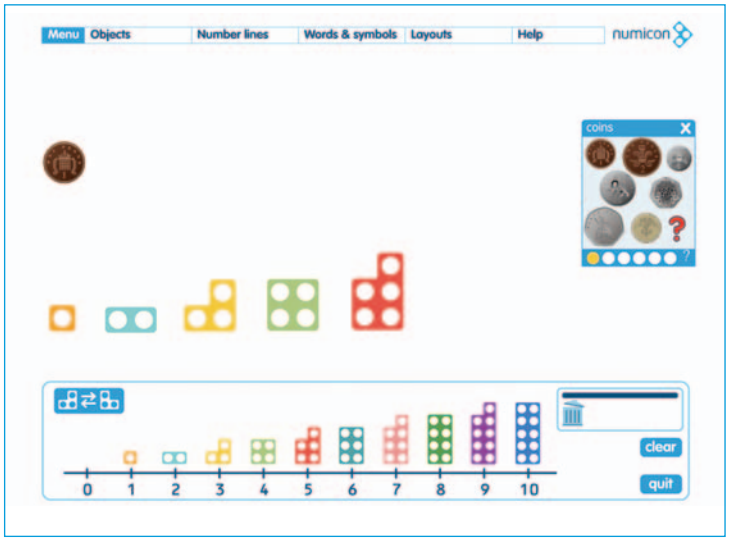


Figure 1

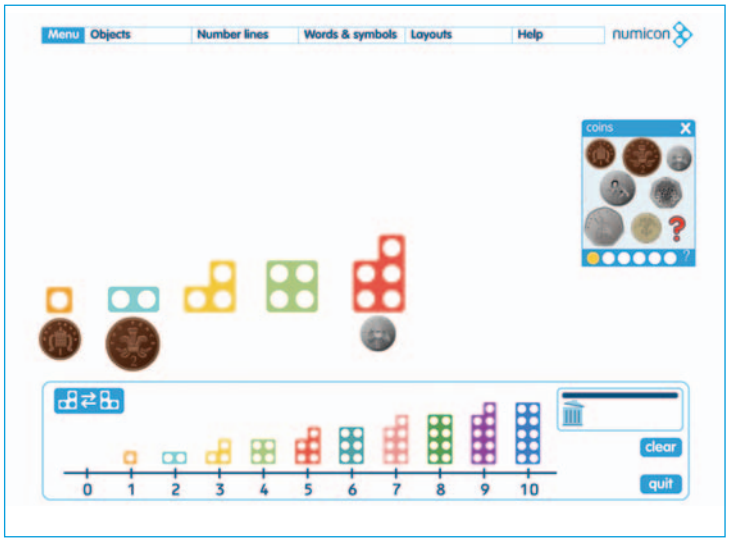


Figure 2

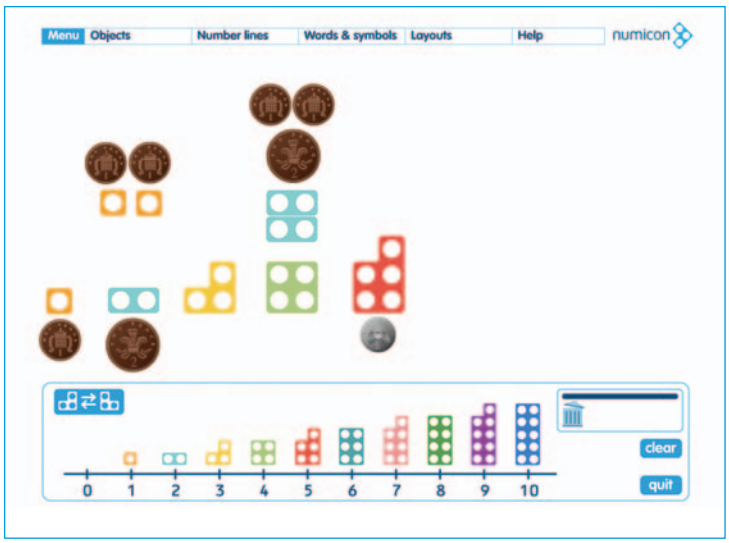


Figure 3

Aim: To use known addition facts of 10 to solve addition problems within 20

Lesson

Main screen with Numicon shapes

Select

Menu: Number lines: Numerals
Menu: Layouts: Addition frame

Activity

- ➔ Select the addition frame from the layout menu
- ➔ Select a numeral less than 10, put it in the first place on the addition frame and put the corresponding shape beside the frame, see figure 1
- ➔ Ask children which shape they would need to add in order to make 10, see figure 2
- ➔ Combine the shapes and put the corresponding numeral in the second space on the frame
- ➔ Select a third numeral and place in the third space on the addition frame
- ➔ Ask children for the total
- ➔ Show the total with Numicon shapes and select the answer from the Number line, see figure 3. Repeat with other examples.

Lesson extension

Main screen with Numicon shapes

Select

Menu: Number lines: Numerals
Menu: Layouts: Addition frame

Activity

- ➔ Choose a teen number, can children find all the ways of making that number which use addition facts of 10.

Mathematical language

Facts, add, more, how many more to make, equals

Reference

For further ideas refer to Numicon Kit 1, Calculating 9A and 9B.

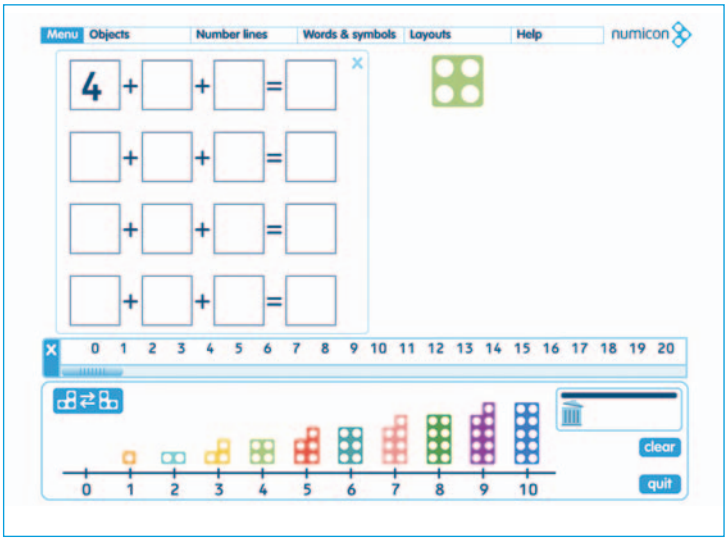


Figure 1

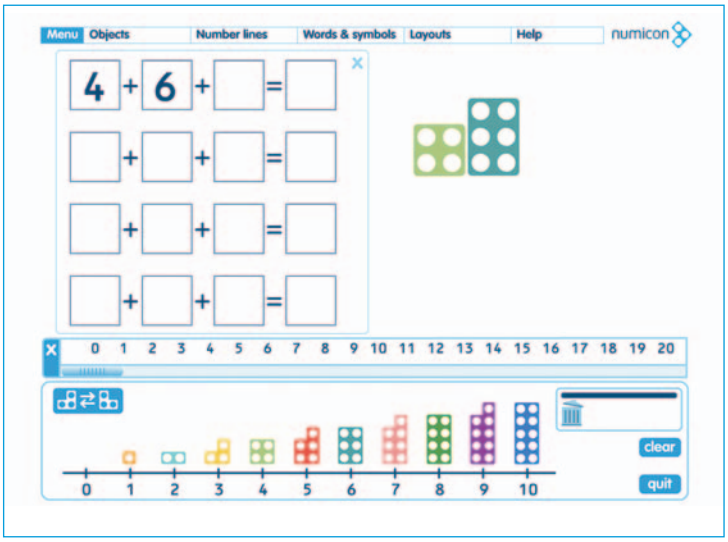


Figure 2

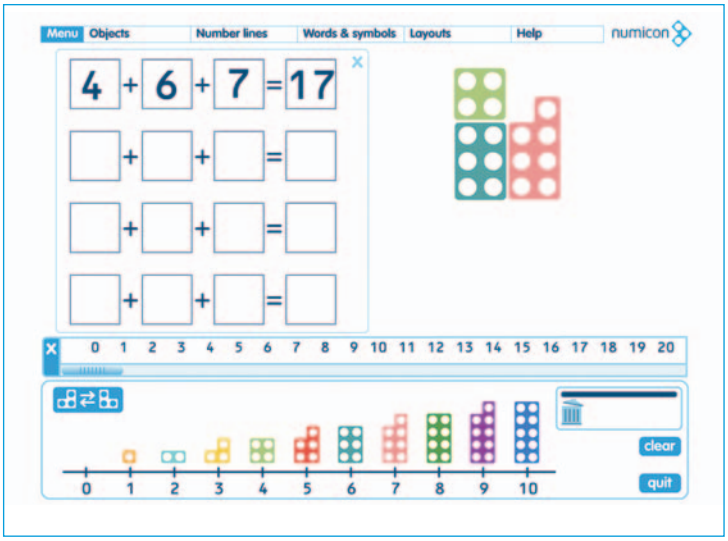


Figure 3

Aim: To develop understanding of place value

Lesson

Main screen with Numicon shapes

Select

Menu: Number lines: Numerals, Numicon tens

Activity

- ➔ Choose a 2 digit number from the Numeral number line
- ➔ Make that number with Numicon shapes, see figure 1
- ➔ Lay the shapes along the Numicon tens number line, see figure 2
- ➔ Repeat with other examples
- ➔ Reverse the activity by making a number with Numicon shapes, the children say how many and find the corresponding numeral.

Lesson extension

Main screen with Numicon shapes

Select

Menu: Objects: Spinners: +10 – 10

Activity

- ➔ Can children say what 1 more, 1 less, 10 more, 10 less than the numebr would be?, see figure 3
- ➔ Check the answer with the shapes

Mathematical language

Tens, units, more, number names, tens number, more, less

Reference

For further ideas refer to Numicon Kit 1, Numbers and the Number System 5B, 6A, 6B, 7A and 7B.

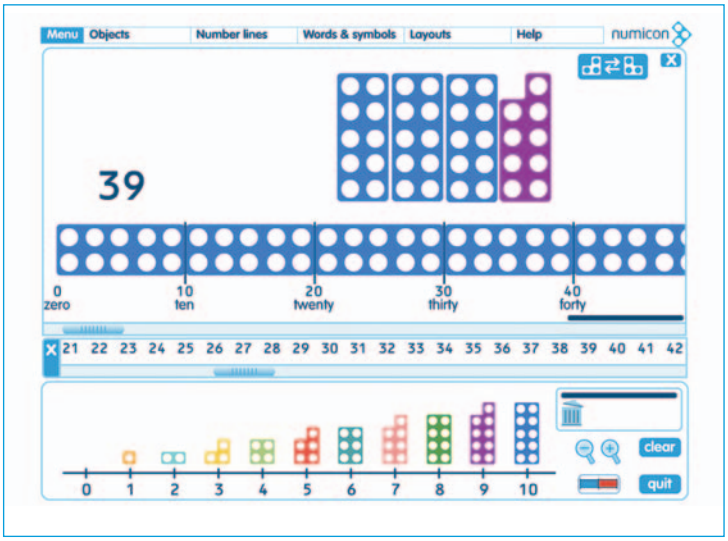


Figure 1

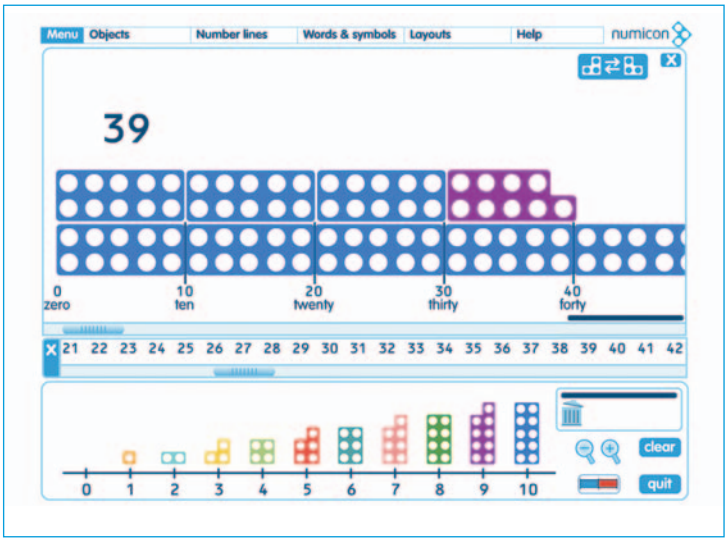


Figure 2

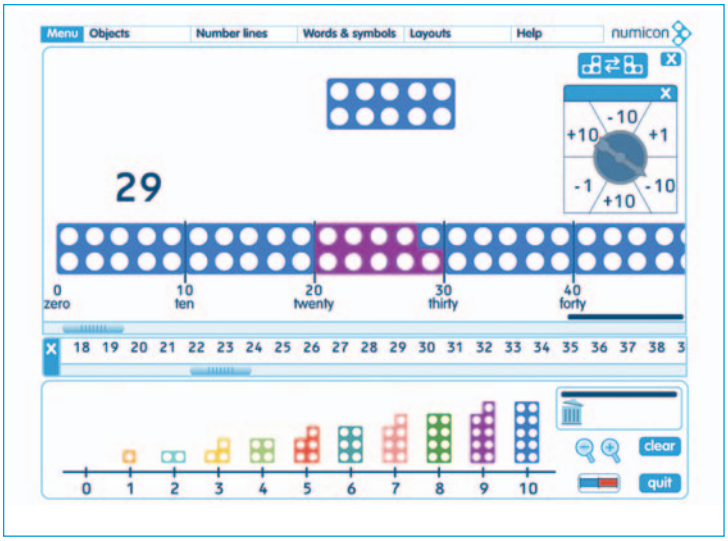


Figure 3