## Unit Overview and Guidance
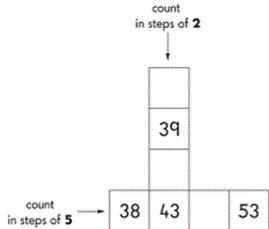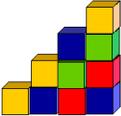
- The exemplification has been taken from the NCETM online 'Resource Toolkit', with additions in order to ensure full coverage.
- Links to the White Rose Maths hubs schemes of work (with questions categorised into the three aims of the national curriculum i.e. fluency, problem solving and reasoning) are hyperlinked to each of the objectives. Many thanks go to the White Rose Maths hub for permission to include their resources.
- The NCETM reasoning questions have also been incorporated into each unit and are identified in pale purple boxes underneath the group of the most relevant objectives.
- The 'big Ideas' sections from the NCETM 'Teaching for Mastery' documents have been included at the start of each unit. Hyperlinks to the full NCETM 'Teaching for Mastery' documents have also been included for easy reference.
- Hyperlinks to NRich activities have also been added to this version. These are found by clicking on the blue buttons like this one ▣ at the bottom of relevant objective.
- Some additional content has been added in order to support mixed-aged planning. Any additional content is in *italics*. Occasionally ~~strikethrough~~ has been used to identify when an objective has been altered and this is primarily where an objective has been split between two units.
- Each unit is sub-divided into sections for ease of planning.  Sub-categories in this unit are;
    1. Counting
    2. Read, write, order and compare numbers
    3. Place value (see also fractions, decimals and percentages)
    4. Identify, represent, estimate and round
    5. Solve problems

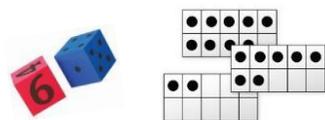| | Reception | Yr 1 | Yr 2 | Yr 3 |
|---|---|---|---|---|
| NCETM Teaching for Mastery Questions, tasks and activities to support assessment | **The Big Ideas**<br><br>*Number (Early Learning Goals)*<br><br>Pupils count reliably with numbers from 1 to 20.<br><br>Place them in order and say which number is one more or one less than a given number. | **The Big Ideas**<br><br>The position a digit is placed in a number determines its value.<br><br>The language used to name numbers does not always expose the place value, for example the word 'twelve' does not make it transparent that the value of this<br><br>number is ten and two. It is important that children develop secure understanding of the value of each digit.<br><br>Place value is based on unitising: treating a group of things as one 'unit'. In mathematics, units can be any size, for example units of 1, 2, 5 and 10 are used in money.<br><br>In place value units of 1, 10 and 100 are used. | **The Big Idea**<br><br>The position (place) of a digit in a number determines its value. Hence the term place value. | **The Big Ideas**<br><br>The value of a digit is determined by its position in a number.<br><br>Place value is based on unitising, treating a group of things as one 'unit'. This generalises to 3 units + 2 units = 5 units (where the units are the same size). |
| | [Becoming a Mathematician] | [Teaching for Mastery Year 1] | [Teaching for Mastery Year 2] | [Teaching for Mastery Year 3] |

NORTH YORKSHIRE County Council

MathsHUBS Archimedes NE

# NUMBER: Number and place value (NPV - 7 weeks)

| Strand | | Reception | Yr1 | Yr2 | Yr3 |
|---|---|---|---|---|---|
| Counting | Counting | ***30-50 months*** *Uses some number names and number language spontaneously.*<br>***30-50 months*** *Uses some number names accurately in play.*<br>***30-50 months*** *Recites numbers in order to 10.*<br>***30-50 months*** *Knows that numbers identify how many objects are in a set.*<br>***30-50 months*** *Realises not only objects, but anything can be counted, including steps, claps or jumps.*<br>***40-60+ months*** *count up to three or four objects by saying one number name for each item*<br>***40-60+ months*** *count actions or objects which cannot be moved*<br>***40-60+ months*** *count objects to 10, and begin to count beyond 10*<br>***40-60+ months*** *count out up to six objects from a larger group*<br>***40-60+ months*** *count any irregular arrangement of up to ten objects*<br><br>***Adult Initiated***<br>**Count objects in a line**: first touching them one by one; then without touching them.<br>**Count objects arranged randomly:**<br>by moving them into a straight line<br>by moving them across one by one when counted;<br>by leaving them in position but touching them;<br>*Can you find an easy way to count these? Could you do it another way?*<br>**Count the same number of different objects:**<br>*Can you find the Numicon shape for 4? Where is number 4 on the number track?*<br>**Spot the mistake when the puppet counts:**<br>*Do you think the puppet counted correctly? What did he do wrong? Can you help him to count again? What does he need to remember next time he counts?*<br>**Count sounds and actions:**<br>*Can you count the beats of the drum? Count the pebbles as I drop them into the bucket?*<br>*Count the number of times you skip with your skipping rope.*<br>*Watch the frog jump along the blank number track. Count the jumps aloud as the frog makes them. How many jumps did the frog make? Count the jumps quietly using fingers. Can you count them in your head?*<br>*How many giant strides do you think you will take to get to the door? How can you check?*<br><br>***Enabling Environments –child initiated, adult supported***<br>**Indoors/Outdoors**<br>**Construction** (indoors /outdoors): can you make a model, obstacle course using a certain number of block, pieces of equipment?<br>**Art Area:** create a picture with a certain number of objects or make a picture and count the objects used. ( this can be done outdoors using large scale outdoor/ natural, found materials/objects)<br>[1] [2] [3] [4] | **count to and across 10, forwards and backwards, beginning with 0 or 1, or from any given number**<br><br>**count to and across 40, forwards and backwards, beginning with 0 or 1, or from any given number**<br><br>count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number<br><br>• count forwards from 80 to 110<br>• count backwards from 105<br><br>[1] [2] [3] [4] | **count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward**<br><br>Use their knowledge of counting on from or back to zero in steps of 2, 3, 5 and 10 to answer multiplication and division questions such as 7 × 2 and 40 ÷ 5. They understand that one way to work out 40 ÷ 5, for example, is to find out how many fives make 40. They know that this can be done by counting forwards in fives from zero or backwards in fives from 40.<br><br>Write the missing numbers in each of these patterns.<br><br>count in steps of **2**<br>39<br>count in steps of **5** → 38 | 43 | 53<br><br>[1] [2] | **count from 0 in multiples of 4, 8, 50 and 100;**<br><br>a) Count on from zero in steps of 2, 3, 4, 5, 8, 50, 100;<br><br>[1] |

# NUMBER: Number and place value (NPV - 7 weeks)

| Counting | | | | | |
|---|---|---|---|---|---|
| | More, Less | **_40-60+ months_** _use the language of 'more' and 'fewer' to compare two sets of objects_<br>**_40-60+ months_** _say the number that is one more than a given number_<br><br>**_Adult Initiated_**<br><br>Count the cups and saucers. _Are there more cups or more saucers, or the same number?_ Count the red bricks and the blue ones. _Are there fewer red bricks or fewer blue ones?_<br><br>**Make a staircase pattern** with bricks, or on pegboard..._Make each step one more._<br><br>_How many are in this step? How many will be in the next step? How do you know?_<br><br>**Build a Numicon staircase** adding one to each shape to find which shape comes next. Link to number line. _What number is one more than 3? Than 9?_<br>**Set out chairs or boxes** to make a bus. Invite children to be the passengers. _There are 3 people on the bus. 1 more gets on. How many are on the bus now? So 1 more that 3 is 4._<br>**Remember** the distinction between 'fewer' and 'less.' Fewer teddies, fewer sweets, fewer cups of tea (object can be counted.) Less water, less sand, less tea (abstract or mass)<br><br>**_Enabling Environments –child initiated, adult supported_**<br><br>**Role play:** when having a picnic another teddy comes... In the home corner another guest come for tea.... _How many more cups, sandwiches etc. do we need?_<br>Setting out chairs or boxes to make a bus, train etc. ( see section opposite)<br>**Construction area:** build 1 more room _Who has used the most/ fewer bricks in their models?_<br>**Transient Art/ open ended materials:** using more /fewer natural objects when making a picture, design or art work<br>**Mud Kitchen:** adding more or fewer objects to mixture/potion e.g., adding more leaves from the herbs growing beside the kitchen- Adapting recipes<br><br>[1] [2] | **given a number, identify one more and one less (1)**<br><br>**given a number, identify one more and one less (2)**<br><br>**given a number, identify one more and one less (3)**<br><br>_There are twenty-nine beads in this pot. I am putting one more bead in the pot. How many are in there now? How did you know? How can you check?_<br><br>_This time there are forty beads in the pot. I take out one bead. How many beads are left in the pot? How did you know? How can you check?_<br><br>_Start with a different number of beads in the pot. Ask your partner to put another bead in or take one out and then say how many there are in the pot. How will you know if your partner is right?_<br><br>**and use the language of: equal to, more than, less than (fewer), most, least (2<sup>nd</sup> half of statement (1))**<br>**and use the language of: equal to, more than, less than (fewer), most, least (2<sup>nd</sup> half of statement (2))**<br><br>_I'm giving each of you a strip of card with some numbers on [five numbers at random from 0 to 30]._<br>_Point to the number which is worth most. Now point to the number which is worth least._ | **count in ~~steps of 2, 3, and 5 from 0, and in~~ tens from any number, forward or backward**<br><br>e.g. Give me the number 10 less than 93. | **find 10 or 100 more or less than a given number**<br><br>e.g. Give me the number 100 less than 756 |
| | NCETM Reasoning | | **Spot the mistake:**<br><br>5,6,8,9<br><br>What is wrong with this sequence of numbers?<br><br>**True or False?** I start at 2 and count in twos. I will say 9<br><br>**What comes next?**<br><br>10+1 = 11,   11+1= 12,    12+1 = 13 | **Spot the mistake**:<br><br>45,40,35,25<br><br>What is wrong with this sequence of numbers?<br><br>**True or False?** I start at 3 and count in threes. I will say 13?<br><br>**What comes next?**<br><br>41+5=46,   46+5=51,    51+5=56 | **Spot the mistake**:<br>50,100,115,200<br>What is wrong with this sequence of numbers?<br><br>**True or False?**<br>38 is a multiple of 8<br><br>**What comes next?**<br>936-10=  926<br>926 -10 = 916<br>916- 10=  906 |

# NUMBER: Number and place value (NPV - 7 weeks)

**Read, write, order and compare number**

**Arabic Numerals**

*30-50 months Sometimes matches numeral and quantity correctly.*
*30-50 months Shows an interest in numerals in the environment.*
*30-50 months Shows an interest in representing numbers.*
*30-50 months Beginning to represent numbers using fingers, marks on papers or pictures.*
*40-60+ months recognise some numerals of personal significance*
*40-60+ months recognise numerals 1 to 5*
*40-60+ months select the correct numeral to represent 1 to 5, then 1 to 10 objects*

**Adult Initiated**

**Sort the birthday cards:** *How did you sort them? Can you use the numbers to sort them? Which numbers were on your cards last birthday? Which will be on your cards next birthday?*
**Spot numbers** around the school, out on a walk, going to a shop, and say what they are. *Where can we spot the number 8?* -on a clock face, in this pack of shuffled cards, on a calculator key-pad, on the 'shop' till, on the telephone, on the computer keyboard,
**Match numbers** to collections of real objects
Use number cards as labels to show how many animals there are in each field…
*How many eggs there are in each nest? Which number could we use to show that?*
**Match numbers** to dot patterns: in pairs of dice, one with dots, one with numerals…on dominoes or on tens frames
**Play** matching games such as snap and Pairs, first matching numerals then matching numerals to dot patterns (as above) or Numicon shapes
**Recognise numbers on the number track** .Stand on 6 on the floor number track. Hop back to 0. Say the numbers as you go. Throw a beanbag onto the track. *What number have you landed on? How many jumps on the track will you need to get there? Count as you jump.*
**Guess the number:** hide a large numeral so that it can be slowly revealed. *What number might this be? How do you know? Are there any numbers it couldn't be? Can you explain why it can't be 6*?
Hide the numbers around the room so that only part of each is revealed. Can the children guess where each number is hiding? *Are any numbers missing? How can we check?*
**Make number labels** for the number of pairs of scissors kept in the jar, the number of paint brushes kept in the pot, the number of pieces in the jigsaw box… display with the matching Numicon shape.
Encourage children to children make price labels for things in the 'shop', for tickets for the 'bus', for things on the menu in the 'café', for raffle tickets…
**Pick out number names** on the pages of favourite rhymes or stories such as: Three Billie Goats Gruff, Three Little Pigs, Goldilocks, Snow White…

---

**count, read and write numbers to 10 in numerals**

**count, read and write numbers to 40 in numerals**

**count, read and write numbers to 100 in numerals**

- Find p 39 in a book
- Make a label to show how many things were in your collection

[1] [2]

---

**compare and order numbers from 0 up to 100; use <, > and = signs**

Here are two signs

[<] [>]

Use these signs to make these correct

52 ☐ 17

18 ☐ 91

50 ☐ 34

Children should be able to order a set of two-digit numbers, such as 52, 25, 5, 22, 2, 55. They explain their decisions. They understand and use the < and > symbols; for example, they write a two-digit number to make the statement 56 > ☐ true.

[1] [2] [3] [4] [5]

**read and write numbers to at least 100 in numerals and in words**

Children should be able to answer questions, such as:

- What numbers can you make using two of these digits: 3, 6, 0?

Write down each number you make. Read those numbers to me. Can you write the largest of the numbers in words?

---

**read and write numbers up to 1000 in numerals and words**

Read these numbers 428, 205, 130, 25, 7, 909

**compare and order numbers up to 1000**

Sort these numbers into ascending order: 95, 163, 8, 740, 25, 0, 400, 303

NORTH YORKSHIRE County Council

MathsHUBS Archimedes NE

# NUMBER: Number and place value (NPV - 7 weeks)

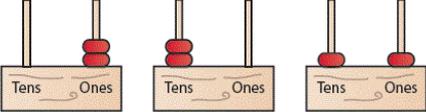| | | | | | |
|---|---|---|---|---|---|
| **Read, write, order and compare number** | Arabic Numerals | ***Enabling Environments –child initiated, adult supported***<br><br>**Outdoors**<br>Children use a large blank tens frame (made from masking tape or sticks) to make collections of found materials in the outdoors to correspond to each numeral<br><br>Children set up their own number trails<br><br>**Car parking:** mark out parking bays using chalk/masking tape. Cars to be parked in numbered bays. Numbers or dots can be added to cars to park in the corresponding numbered parking space<br>**Mud Kitchen:** follow recipes e.g., add 3 pine cones, 5 leaves, 7 stones etc.<br>**Indoors**<br>**Small world:** mark out a car park, numbering the bays on a shoebox lid for small world cars to park. Small world farm- specific numbers of animals in different fields<br>**Role play:** in the café- taking orders, writing the menu- cost of items<br>In the home corner- following recipes, writing shopping lists- 4 sausages, 5 eggs<br>Numbering seats on the train, the bus or for the music show etc.,- making tickets to match seat numbers<br>**Sand/water:** Find a digit, pour that many cups into a container and add that many beads etc.<br><br>1  2 | | | |
| | NCETM | | **Do, then explain**<br><br>Look at the objects (in a collection). Are there more of one type than another?<br><br>How can you find out? | **Do, then explain**<br><br>37  13  73  33  3<br><br>If you wrote these numbers in order starting with the smallest, which number would be third?<br><br>Explain how you ordered the numbers. | **Do, then explain**<br>835  535  538  388  508<br>If you wrote these numbers in order starting with the smallest, which number would be third?<br>Explain how you ordered the numbers. |
| **Place value (see also FDP)** | Place Value | (ELG) Pupils count reliably with numbers from 1 to 20.<br><br>(ELG) Place them in order and say which number is one more or one less than a given number. | *(Year 2 adapted) Begin to recognise the place value of each digit in a two-digit number (tens, ones)*<br><br>*Look at these numbers.*<br><br>*37  12  45  60  72  27*<br><br>*Which of these numbers is the largest?*<br><br>*Which of these numbers are below 20?*<br><br>*What is the value of …? (point to digits in the list above)* | **recognise the place value of each digit in a two-digit number (tens, ones)**<br><br>Look at these numbers.<br><br>37  12  45  60  72  27<br><br>Which of these numbers is the largest?<br><br>Which of these numbers is between 10 and 20?<br><br>What is the value of …? (point to digits in the list above)<br><br>1  2  3 | **recognise the place value of each digit in a three-digit number (hundreds, tens, ones)**<br><br>For each of these numbers: 428, 205, 130, 25, 7, 909, tell me: How many hundreds? How many tens it has? How many ones?<br><br>1  2 |

North Yorkshire County Council

MathsHUBS Archimedes NE

# NUMBER: Number and place value (NPV - 7 weeks)

<table>
<tr>
<td rowspan="2">Place value<br>(see also FDP)</td>
<td>NCETM Reasoning</td>
<td></td>
<td></td>
<td><strong>Do, then explain</strong><br><br>Show the value of the digit 2 in these numbers?<br><br>32    27    92<br><br>Explain how you know.<br><br><strong>Make up an example</strong><br><br>Create numbers where the units digit is one less than the tens digit. What is the largest/smallest number?</td>
<td><strong>Do, then explain</strong><br><br>Show the 3 value of the digit 3 in these numbers?<br><br>341    503    937<br><br>Explain how you know.<br><br><strong>Make up an example</strong><br>Create numbers where the digit sum is three.<br><br>E.g. 120, 300, 210<br><br>What is the largest/smallest number?</td>
</tr>
</table>

## Identify, represent, estimate and round

### Identify, represent and estimate

**40-60+ months** *estimate how many objects they can see and check by counting them*
**40-60+ months** *record using marks that they can interpret and explain*

***Adult Initiated***
**Number boxes**. Fill small gift boxes with a collection of items (pebbles, shells, feathers, coins). Ask children to shake boxes and guess what might be inside and how many things there might be. Open the box and count; naming objects as they count will develop counting skills; *1 shell, 2 shells, 3 shells…*

Once children have opened their box and counted the objects they can then begin to discuss and compare *Who has the most? Do you have more than …? Do you have fewer than….? If I give you one more how many will you have then? How can you check?*

---

**identify and represent numbers using objects and pictorial representations including the number line,** **(1st half of statement (1))**

**Identify and represent numbers using objects and pictorial representations.** **(1st half of statement (2))**

**identify and represent numbers using objects and pictorial representations including the number line,** **(1st half of statement (3))**

*I'm giving each of you a strip of card with some numbers on [five numbers at random from 0 to 30].*

*Make these numbers using tens and ones apparatus and put them in order.*

*Why have you put this number there?*

`1` `2` `3` `4`

---

**identify, represent and estimate numbers using different representations, including the number line**

Children should be able to represent numbers using equipment such as bundles of ten and single art-straws, 10p and 1p coins and number lines.

Look at the squares of chocolate
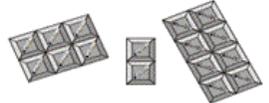


There are 16 squares

Tick (✔) the sum that matches the picture:

6+2+8=16    5+2+9=16    5+6+5=16
6+6+4=16    8+3+5=16

`1` `2` `3`

---

**identify, represent and estimate numbers using different representations**

Show me 642 on a number line, with Dienes apparatus, with place value cards etc.

What number is represented by each set –

What number is halfway between 65 and 95? How do you know?

---

### NCETM Reasoning

**Possible answers**
A number rounded to the nearest ten is 540. What is the smallest possible number it could be?

**What do you notice?**
Round 296 to the nearest 10. Round it to the nearest 100. What do you notice? Can you suggest other numbers like this?

NORTH YORKSHIRE County Council

MathsHUBS Archimedes NE

# NUMBER: Number and place value (NPV - 7 weeks)

| | | | | | |
|---|---|---|---|---|---|
| Solve problems | Solving Problems | *40-60+ months begin to identify own mathematical problems based on own interests and fascinations* | *(40-60+ months and Year 2 adapted) use place value and number facts to solve simple problems based on own interests and fascinations* | **use place value and number facts to solve problems**<br><br>Can you find an even number more than 30 and less than 50, how many can you find?<br><br>If you put 2 beads onto a tens/ones abacus you can make the numbers 2, 20 and 11.<br><br><br><br>Do the same with 3 beads. How many different numbers can you make? How many different numbers can you make using 4 beads?<br><br>1 2 3 4 | **solve number problems and practical problems involving these ideas**<br><br>a) Jack walks 645 metres to school. Suzy walks 100 metres less. How far does Suzy walk?<br><br>b) What is 1 more than 485? Than 569? Than 299?<br><br>c) What number needs to go into each triangle? Explain why?<br><br>$642 = 600 + \Delta + 2$ $967 = \Delta + 60 + 7$<br><br>1 2 3 4 5<br>6 7 8 9 1 |