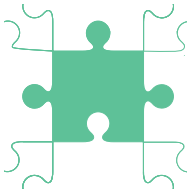
NCCA

Primary Mathematics Toolkit – Support material

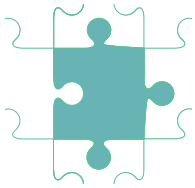
Number: Place value and base ten – Suggestions for teaching



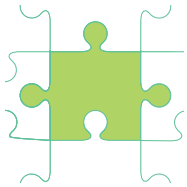
FOSTERING PRODUCTIVE DISPOSITION

- Highlight and engage children with the place value and base ten concepts in interesting and creative contexts, e.g., *examining and comparing world records, long-distances, foreign currencies*.
- Promote and highlight the usefulness of rounding in practical scenarios, e.g., *mentally calculating the total price of goods by rounding each item to the nearest whole number*.
- Provide children with meaningful self-assessment opportunities and reflection using mathematical journaling, e.g., *to round the answer to the nearest 1000, I focused on the second last digit in every number as this digit represents the tens...*

ENCOURAGING PLAYFULNESS WITH MATHEMATICS



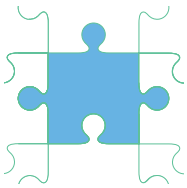
- Integrate learning in place value and base ten with playful outdoor maths games, e.g., *assign different coloured bibs to children, each representing hundreds, tens and ones and encourage children to model a given number when a whistle is blown, or vice versa – have bibs with numbers and ask children to position themselves correctly to represent a multi-digit number*.
- Establish a space within the classroom for children to experiment with place value and base-ten mathematical ideas using a range of concrete materials, e.g., *notation boards, dienes blocks, whiteboards, playing cards, cubes, calculators, etc.*
- Play games that incorporate place value and base ten concepts, e.g., *play 'Guess my number' and encourage children to ask appropriate questions to discover the number (Is your number a whole number? Is it less than 50? Is the tens digit even?).*



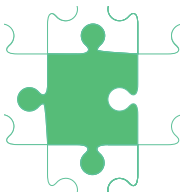
USING COGNITIVELY CHALLENGING TASKS

- Use thoughtful questioning to support children's exploration of problems, e.g., *what numbers (largest and smallest) can you make using the digits 6, 7, 8, 9? What if 7 had to be the first number? What would happen if we added a zero/decimals point?*
- Support children to choose appropriate strategies when solving place value and base ten problems, e.g., *rounding to the nearest 10 or 100, converting from decimals to percentages or vice versa, using 0 as a placeholder*.
- Draw children's attention the numbers used in children's daily lives and incorporate these in tasks, e.g., *use the digits in today's date to make as many. different two-digit/three-digit numbers as you can, rearrange the numbers to create a date far into the future, rearrange to find the date closest to your birthday*.

EMPHASISING MATHEMATICAL MODELING



- Encourage children to model their solution pathway of place value and base-ten problems using multiple representations, e.g., *I used dienes blocks to represent the numbers in tens and ones, then I drew a picture of the two different amounts, and finally I showed my answer using numerals and the > symbol*.
- Provide opportunities for children to explain and justify their models of multi-digit numbers, and to compare the efficiency of each, e.g., *how are their models the same/different? Does the size of the number impact the way you choose to model it?*
- Provide opportunities to use concrete materials and digital tools to represent and compare fractions/decimals/percentages and apply these in situations that are meaningful to the children, e.g., *create an appropriate model to compare and order your test results from this term*.



PROMOTING MATHS TALK

- Provide opportunities for children to express, share and exchange the mental calculations that they applied when solving place value and base ten problems.
- Support children to revoice their peers' problem-solving strategies, e.g., *I like how Group 1 rounded to the nearest ten rather than hundred, it helped them to estimate the answer more accurately*.
- Use, and encourage children to use, creative and open-ended questions to support place value and base ten discussion, e.g., *describe how you used your knowledge of place value to quickly calculate the addition of those two 3-digit numbers? What might happen if all decimal points disappeared from our classroom/town?*

Developed in collaboration with **Jean Donnelly, Primary School Teacher, Co. Dublin**