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| **Mathematics: Number: Cardinality and Composition - Developing Knowledge and Skills Sequentially** | | | |
| **Range/Knowledge** | | **Positive Relationships** | **Enabling Environments** |
| 1. | • Reacts to changes of amount when those amounts are significant (more than double) | • Notice and mirror children’s reactions to changes in amount  • Add to objects & draw attention to the change in amount, using words like *more*.  • When feeding babies comment on whether they would like more after being winded, e.g. *Oh, you want more*.  • Use feeding, changing and bathing times for finger-play with young babies | • Provide small groups of the same objects in  treasure baskets, as well as single items. |
| 2. | • May be aware of number names through their enjoyment of action rhymes and songs that relate to numbers • Looks for things which have moved out of sight | • Take opportunities during play to sing number rhymes.  • During personal care routines make a point of using numbers.  • Play peek-a-boo hiding games with toys and people. | • Plan to sing number rhymes with actions. Involve families in sharing number rhymes from home cultures. |
| 3. | **Cardinality**  • Uses number words, like one or two and sometimes responds accurately when asked to give one or two things | • Model counting things in everyday situations and routines • Take opportunities to say number words in order with children as they play, e.g. 1,2,3 go! • Use number words in meaningful contexts, e.g. Here is your other mitten. Now we have two. | • Provide varied sets of objects for playful opportunities for children to independently explore lots, more, not many and not enough • Count while engaging in everyday tasks and while moving around.  • Sing songs with counting strings. |
| 4. | **Cardinality (How many?)**  • In everyday situations, takes or gives two or three objects from a group  • Beginning to notice numerals (number symbols)  • Beginning to count on their fingers | • Encourage children to explore the collections they make, comparing amounts and counting some of the items, emphasising the last number e.g. 1,2,3. There are 3 leaves.  • Use opportunities to model and encourage counting on fingers.  • When singing number rhymes with props, draw attention to contrasting differences and changes in numbers, checking together How many now? • Point out the number of things whenever possible, e.g. rather than just chairs, say four chairs. • Encourage children to use marks to represent their mathematical ideas in role play • Help children to give or get two or three items, e.g. during snack time help children to take two pieces of fruit. | Provide buckets and bags for children to create  collections of objects which they can count.  • Provide mark-making materials indoors and outdoors for children to represent their own ideas in play.  • Provide opportunities for children to explore  cardinality in the environment using self-correcting  resources, e.g. jigsaw with two ducks and the number two, or displays showing the numeral and the number of items.  • Sing counting songs and rhymes which help to develop children’s understanding of number. |
| 5. | **Cardinality**  • Subitises one, two and three objects (without counting)  • Counts up to five items, recognising that the last number said represents the total counted so far (cardinal principle)  • Links numerals with amounts up to 5 and maybe beyond  • Explores using a range of their own marks  and signs to which they ascribe mathematical meanings  **Composition**  • Through play and exploration, beginning to learn that numbers are made up (composed) of smaller numbers  • Beginning to use understanding of number to solve practical problems in play and meaningful activities  • Beginning to recognise that each counting number is one more than the one before  • Separates a group of three or four objects in different ways, beginning to recognise that the total is still the same | • Use opportunities within daily routines to support children’s developing sense of number • Model and encourage counting and representing numbers within role play, e.g. making a telephone call using a list of numbers • Value children’s own mathematical representations within their pretend play  • Model writing numerals, e.g. on badges, birthday cards and banners • When counting objects with children emphasise the cardinal principle: 1, 2, 3, there are three cups • Invite children to count out a number of things from a larger group, e.g. Can you get five crackers?  • Encourage children to use their fingers to show an amount e.g. when asking another child to share resources, to show on their fingers how many they need • Emphasise the one more, one less pattern in rhymes and traditional tales, asking children to predict the next number • Model wondering and talking about how you might solve a number problem.  • Value and support children to use their own graphics when problem solving | • Provide a numeral rich environment, e.g. in roleplay  areas, mud-kitchen recipes, numbers on trikes and toilet doors • Provide numerals that children can pick up and use within all aspects of their play • Provide resources indoors and outside for children to explore and talk about higher numbers  • Play with either dot or numeral dice. Discuss that six on the dice is worth more than four • Provide a variety of mathematical picture books  and share them as part of “warm and cuddly”  maths times  • Explore different arrangements of the same number, e.g. partitioning five in different ways;  hiding one group and “guessing” the hidden  number  • Support children to choose how to arrange  collections of two, three and four objects in  different ways  • Provide spaces to display children’s ongoing  mathematical thinking, e.g. their own ways of  representing their thinking, and scribing children’s  words. |
| 6. | **Cardinality**  • Engages in subitising numbers to four and maybe five  • Counts out up to 10 objects from a larger group  • Matches the numeral with a group of items to show how many there are (to 10)  **Composition**  • Shows awareness that numbers are made up (composed) of smaller numbers, exploring partitioning in different ways with a wide range of objects  • Begins to conceptually subitise larger numbers by subitising smaller groups within the number, e.g. sees six raisins on a plate as three and three  • In practical activities, adds one and subtracts one with numbers to 10  • Begins to explore and work out mathematical problems, using signs and strategies of their own choice, including (when appropriate) standard numerals, tallies and “+” or “-“ | • Talk with children about the strategies they have used to solve a problem • Spot opportunities to playfully pose composition problems for children to explore • Enjoy subitising games and sustained shared thinking about number, indoors and outdoors.  • Encourage cardinal counting by saying how many there are after counting (…6, 7, 8. There are 8 balls) • In everyday activities, ask children to count out a number of things  from a group (e.g. Could you get seven cups for snack time?) • Encourage children to make predictions and visualise the outcome in stories, rhymes and songs if one (or two) is added or taken away  • Talk to children about the marks and signs they use to represent and communicate their thinking. As appropriate, model and discuss  informal and standard ways (e.g. using arrows, plus and minus signs) • Begin to model calculations in mathematical stories and number rhymes and in real contexts, using a range of ways of representing (e.g. five-frames). Use both informal and standard ways to record these, including tallies and symbols. • Discuss children’s own graphical strategies to solve problems, using some vocabulary of addition and subtraction. | • Sing counting songs and count together forwards  and backwards, starting from different numbers and in different step sizes. Discuss numbers coming before, after and between and stress patterns • Plan opportunities to order mixed-up numerals • When counting groups as part of routines, e.g. self-registration with ten-frames, dinner chart - record the final total as a label for children to see • Subitise with children, talking about how they see numbers of things made up in a variety of arrangements (e.g. recognising odd and even numbers) • Pose everyday estimation problems and establish mental estimation benchmarks, e.g. more or less than 10 • Set up an estimation station where everyone records guesses; later count and order the guesses • Build counting and ways of representing numbers In to everyday routines • Play subitising games which involve quickly revealing and hiding numbers of objects, perhaps showing numeral cards and fingers • Drop marbles into a tin and ask the children to listen  (without looking) to count how many there are  • Provide opportunities for children to match a number of objects to the numeral, including zero, and display number lines to 100 at child height • Provide dice, board and card games, sometimes involving older children, families and members of the local community • Provide resources to make “staircase” patterns which show that the next counting number includes the previous number plus one • Display children’s mathematical representations, including explanations of the children’s meaning making |