

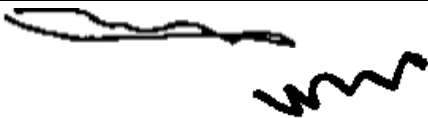
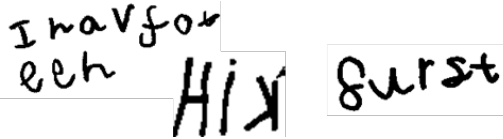
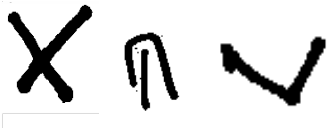
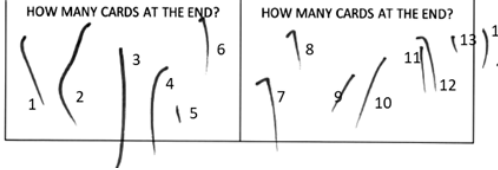
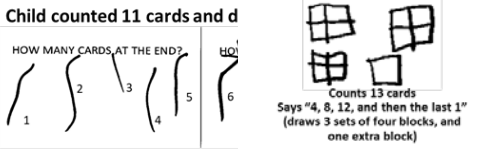


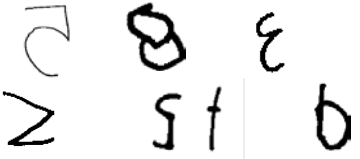


Children's Notations for communicating different number-related meanings across tasks - Category Framework (Voutsina & Stott, 2022)

	Notation Category	Description	Example notations from our data
1	Idiosyncratic	Unable to determine any regularities in the forms produced, that could relate to the task (with regards to quantity, ordinal position, or labelling). Includes scribbles and zig-zag type marks. The form may be meaningful to the child but not to external observers	
2	Intentional drawing	The child intentionally drew a picture of what was in front of them, something from the object or that they refer to in their response (without any reference to numerosity or ordinal position)	
3	Continuous form	The child produced continuous linear or pretend writing forms, without any similarity to graphemes or numbers (typically written in left to right direction) in response to the task (with regards to quantity, ordinal position, or labelling). The form may be meaningful to the child but not to external observers	
4	Grapheme	The child produced a letter or a series of letters instead of a numeral to signify quantity, ordinal position, or labelling. There is no one-to-one correspondence with quantity	
5	Other symbolic form	The child produced common, discrete symbols (such as ticks, crosses, arrows, circles, dots, single vertical or horizontal lines) to signify quantity, ordinal position, or labelling, with no meaningful pattern for the observer.	

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	Notation Category	Description	Example notations from our data
6	Iconic	<p>a) Does not align with quantity or ordinal position in task: Using various forms (bars, objects etc.), the child produced an inaccurate correspondence of quantity or indication of number associated with ordinal position. The notation communicates incorrect quantity or ordinal position, or does not align with child's spoken response</p>	<p>Child counted 14 cards and drew 15 lines</p> 
		<p>b) Aligns with quantity or ordinal position in task: Using various forms (bars, objects etc.), the child produced an accurate one-to-one correspondence of quantity or indication of number associated with ordinal position. The notation communicates correct quantity or ordinal position, or aligns with child's spoken response</p>	<p>Child counted 11 cards and d</p> 
7	Misaligned Hindu-Arabic numeral	<p>a) Written numeral does not align with spoken number (may be written in developing or developed form)</p>	<p>Misaligned a</p>  <p>Misaligned b</p> 
		<p>b) Written numeral aligns with spoken number (may be written in developing or developed form), but does not align with quantity or ordinal position of the task</p>	
8	Developing Hindu-Arabic numeral	<p>Written numeral aligns with spoken number, resembles Arabic numeral and is recognisable by the researchers, but not yet in fully developed form with regards to appearance and / or place value</p>	
9	Developed Hindu-Arabic numeral	<p>The numeral is written in fully developed form and aligned with the quantity, ordinal position or label verbally expressed by the child during the activity</p>	