Number Relationships: Sample Formative Assessment for Early Intervention

(Adapted from 4 Relationships that Increase Students' Number Sense, Tondevold, 2015)

1. Spatial Relationships

(recognising how many without counting/seeing a visual pattern)

Task:	Possible Responses:	Comments:
1.When asked to represent 4 using their fingers, the pupil produces 4 fingers without having to count them.	• Level 1: Pupil does not show 4 fingers • Level 2: Pupil puts one finger up at a time saying "1, 2,3,4" and shows 4 • Level 3: Pupil puts all four fingers up at once without having to count individually	
2.When shown the familiar dice dot patterns for 1 through 6 , the pupil instantly tells how many without having to count each individual dot.	• Level 1: Pupil does not give accurate response • Level 2: Pupil counts each dot one by one to get the answer. • Level 3: Pupil instantly recognises the amount without counting and says the correct number within 3 seconds.	
3.When shown a number using for 3 seconds, the pupil can reproduce the same number with counters, their fingers, dot stickers, or other manipulative.	• Level 1: Pupil cannot produce the same number • Level 2: Pupil shows the same number but does not position them the same. • Level 3: Pupil puts their cubes in the same exact position as the dots. .	
4.When asked to represent 8 using their fingers, the pupil produces 8 fingers.	• Level 1: Pupil does not show 8 fingers • Level 2: Pupil puts one finger up at a time saying "1,2,3,4" until they have 8. • Level 3: Pupil puts up all five on one hand without counting, but then counts 6,7,8 on the other hand. • Level 4: Pupil puts all 8 fingers up at once without having to count any.	
5.When shown a dot pattern card containing a number larger than 6, the pupil can determine the number without having to count each individual dot/item.	• Level 1: Pupil does not give the correct number. • Level 2: Pupil counts each dot/item one by one to get the correct answer. • Level 3: Pupil recognises one of the groups and counts on from that. • Level 4: Pupil instantly recognises the amount without counting and says the correct number within 3 seconds.	

2. One and Two More, One and Two Less

(knowing which numbers are one and two less or more than any given number)

Task :	Possible responses:	Comments:
1.When shown a numeral like 7, the pupil is asked "What number is one more than this?" If they can do this, choose another number and ask what is 2 more?	• Level 1: Pupil gives the incorrect number (try with a smaller number) • Level 2: Pupil can give the correct answer for +1 • Level 3: Pupil gives correct answer for +1 but has to count for + 2 • Level 4: Pupil can give the correct answer for +1 and + 2 • Level 5: Pupil can give the correct answer when presented with a numeral in the teens.	
2.Ask the pupil to count out 5 cubes. Add one more cube to the pile. Ask how many are there? If they can do this without counting, add 2.	• Level 1: Pupil answers incorrectly • Level 2: Pupil gives the correct answer but has to recount all the cubes. • Level 3: Pupil knows how many when you add one without having to recount. • Level 4: Pupil knows how many when you add one, but recounts when you add two. • Level 5: Pupil knows how many when one or two are added.	
3.When shown a numeral, like 6 and asked "What number is one less than this number? the pupil answers correctly. If the pupil can do this use another number and ask what number is two less.	• Level 1: Pupil will give an incorrect answer (try a smaller numeral). • Level 2: Pupil can give a correct answer for -1 • Level 3: Pupil can give correct answer for -1 and -2 • Level 4: Pupil can give correct answer when presented with a numeral in the teens	

4.Ask the pupil to count out 9 cubes. Take one away and ask how many cubes the pupil has now. Does the pupil know there are 8 without counting them? If the pupil can do this ask a similar question but take 2 away.	• Level 1: Pupil answers correctly. • Level 2: Pupil gives the correct number of cubes but has to recount all the cubes. • Level 3: Pupil knows how many when you remove one without having to recount. • Level 4: Pupil knows how many when you remove one, but recounts when you remove two. • Level 5: Pupil knows how many when one or two are removed.	

3. Friendly Numbers

(10 has the important role in the number system (2 fives make 10), pupils should know numbers relate to 5&10)

Task:	Possible Responses:	Comments:
1. Give the pupil a rekenrek. Ask the pupil to show you 7 beads. Watch to see how the pupil counts out the 7.	• Level 1: cannot count 7 beads • Level 2: counts the 7 beads one-by-one • Level 3: uses 5 beads and 2 more Level 4: counts three beads to leave and pushes over the rest.	
2.Count out 6 cubes and ask the pupil how may more cubes are needed to make 10.	• Level 1: Pupil cannot do the task • Level 2: Pupil adds cubes one-by-one to get to 10, then counts how many they added. • Level 3: Pupil adds groups to get to ten (add 2, then 2) • Level 4: Pupil just knows you needed to add 4	
3.Count out 17 cubes and ask the pupil how many cubes you would need to take away to make 10.	• Level 1: Pupil cannot do the task • Level 2: Pupil takes away cubes one-by-one to get to 10, then counts how many they took away or pupil might count on from 10. • Level 3: Pupil takes away groups to get to ten (take away 5, then 2) • Level 4: Pupil just knows you need to take away 7	
4.Ask the pupil to count out 12 cubes and write the number on paper. Then ask the pupil to show you with the cubes what the 2 (point to it) and the 1 means with the cubes.	• Level 1: Pupil cannot show the 2 numbers with the cubes • Level 2: Pupil shows 2 cubes for “2” and 1 cube for the “1” • Level 3: does level 2, but when asked about the remaining 9 cubes, the pupil figures out those go with the 1to make a 10 • Level 4: Pupil shows the 2 cubes and the ten that represent the 1.	

4. Part-Part- Whole

(seeing a number as being made up of two or more parts)

Task:	Possible Responses:	Comments:
1.Count out 7 cubes, separate into two groups (like a 3 and 4). Does the pupil know there are still 7 cubes?	• Level 1: pupil believes there is not 7 cubes • Level 2: pupil has to count them to determine if there are still 7 • Level 3: Pupil knows that even though you moved some of them, there are still 7	
2.Count out 8 cubes. Put some cubes in a cup so the child cannot see them. The child can see how many are still left, ask the pupil how many you put in the cup.	• Level 1: Pupil cannot determine the amount • hid in the cup. (try a smaller number like 4, and see if the pupil can determine how many you hide.) • Level 2: Pupil counts one-by-one to figure out how many you hid. • Level 3: child can tell you within 3 seconds how many you hid.	
3.Using one of the dot pattern cards, cover some of the dots with a post-it note. Tell the child how many dots are on the entire card, but some are covered by the post-it. Can the child determine the number of hidden dots?	• Level 1: Pupil does not give an accurate answer. • Level 2: Pupil counts one-by-one to figure out how many dots are hiding under the post-it. • Level 3: Pupil can tell you within 3 seconds how many dots are hiding under the post-it.	