Assessment

The SENA assesses the following aspects of the Learning Framework in number

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Assessment

1. **Verbal and written labels**
2. **Building addition and subtraction through counting by ones**
3. **Building addition and subtraction through grouping**
4. **Building multiplication and division through equal grouping and counting**
5. **Building place value through grouping**

It is important in teaching to observe and take account of students' strategies as they attempt to solve problems.

To assist in identifying the strategies which students use, two assessment schedules have been developed.

The assessments take the form of diagnostic interviews and currently focus on:

- numeral identification
- counting forwards and backwards
- subitising
- addition and subtraction
- multiplication and division
- place value.

Teachers use the diagnostic interview to make informed judgements about students' strategies for solving number problems. The *Learning framework in number* provides guidance in analysing students' responses.

1. **Numeral identification** Numerals are the written and read symbols for numbers. Learning to identify, recognise and write numerals is an important part of early arithmetical development.

Displaying numeral cards individually, and asking the student to name the numeral, is a way of assessing numeral identification.

A sample of numbers is presented to the students. For example:

1. **Counting forwards & backwards**

Counting sequences includes the capacity to create the forward sequence of number words as well as being able to identify numerals. The creation of the number word sequence requires more than generating a rote count. Counting develops from the task of reproducing a sequence to creating a 'breakable chain' of numbers. The ability to immediately say the number after a given number is essential if a student is to progress to using counting-on to find the total of two numbers.

When children learn to say the counting words, it is quite common for them to experience some problems with the 'teens'. The teen number words often sound very similar to other number

words, For example, 'thirteen' sounds similar to 'thirty', 'fourteen' to 'forty', 'fifteen' to 'fifty' and so on. Sometimes, when you ask a child what number comes after 'nineteen', you will hear the response 'ninety-one'. This is a logical answer if the child treats the number words 'nineteen' and 'ninety' as being the same.

The purpose of these assessment tasks is to assess the students' ability with the forward & backward number word sequence. A particular purpose is to assess how far the student can continue the number sequence. Number word after & before tasks assess the students' ability to constantly say the number before or after a given number or whether the student counts from 1 to respond to these tasks.

1. **Subitising**

The subitising assessment tasks are assessing whether the student is able to instantly recognise & allocate a number word to a small group of perceptual items.

An example of subitising is naming the number of biscuits on a plate without having to count each biscuit. The limit on this process is about seven or eight objects.

Being able to name spatial arrays in this way is an important basis for group concepts of number.

1. **Addition and subtraction through counting and grouping** These tasks require students to determine how many would be in a collection resulting from adding or subtracting.

To find the answer to 7 + 6, a student might start with 7 and count on, saying, "Seven…8,9,10,11,12,13". Alternatively, a student could say that six and six make twelve (by using knowledge of doubles) and one more is thirteen. The use of doubles is quite common as a transition from relying on counting by ones. Some students will be able to "bridge to ten". This requires anticipating how many are needed to make ten and then splitting six into three and three.

That is:

The process of splitting numbers is sometimes called partitioning. The emphasis is not only on seeing if the student is able to answer correctly, but also on observing how the student solves the problem. For example, to solve a problem, is the student able to:

- count visible items by ones?
- find the total of two groups of objects when the objects are concealed?
- count on by ones from the larger number?
- apply strategies other than counting by ones such as doubling or bridging to ten?

Sample task

1. **Building multiplication and division through equal grouping and counting** Students' early knowledge of multiplication and division is based on the development of counting sequences, the skills of combining, partitioning and patterning and the students' ability to use equal groups.

To gain a sense of the student's understanding of multiplication and division, the assessment focuses on the student's use of equal groups and knowledge of sequences of multiples.

Generally, students will progress from **forming groups through sharing one-by-one without obvious reference to the equal groups**, to **counting and sharing visible groups in multiples**, to **coordinating groups in repeated addition**, and then to **using multiplication and division as operations**.

1. **Place value** To understand place value, students need to be able to view a group of ten as one (composite) unit. Many of the processes needed in addition and subtraction require students to "see" the ten in numbers. For example, in the number 24, the student needs to have an understanding that this number represents two tens and four ones.

Regrouping tasks provide evidence of students' understanding of place value.

The assessment focuses on the students' ability to use mental computation strategies to solve two digit addition & subtraction tasks.

Sample task

Source: Count Me In Too, http://www.curriculumsupport.education.nsw.gov.au/countmein/assesment.html