

3. What does ICAN measure?

ICAN includes two types of data collection instruments: the assessment tool and the contextual questionnaires.

The ICAN assessment tool

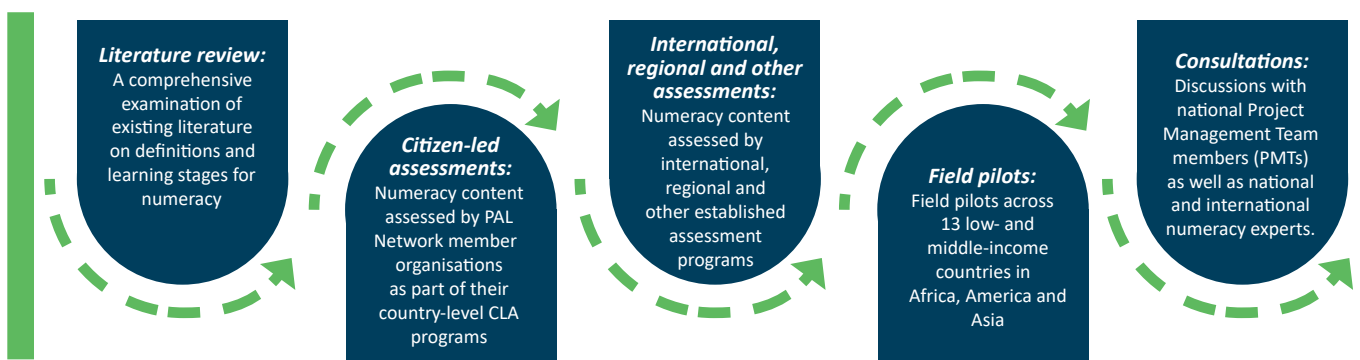
Definitions of foundational numeracy commonly include domains such as number knowledge, measurement, geometry and simple data display.¹

The minimum proficiency level descriptor for numeracy under SDG 4.1.1 for classes 2 or 3 also requires students to demonstrate skills in number sense and computation, shape recognition and spatial orientation.

Rather than focusing on specific education objectives in individual countries, ICAN assessment tasks align to UNESCO's Global Proficiency Framework, which defines minimum proficiency levels that learners are expected to demonstrate more generally.

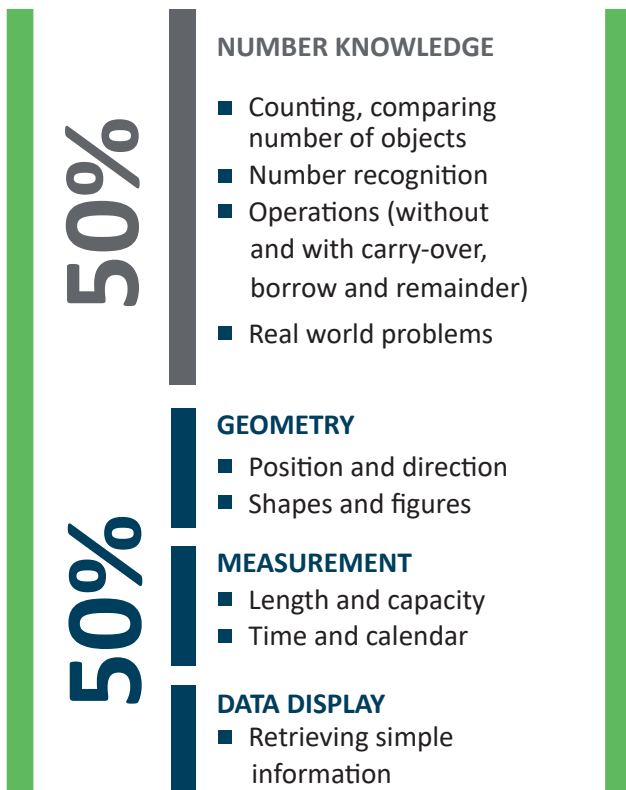
The ICAN assessment administration process includes recommendations regarding specific procedures to follow to ensure that the assessment results reflect the best that each child can do. The assessment process is adaptive to children's ability, so that they do not have to attempt all levels of the tool. In addition, the child's comfort and a commitment to accurately recording her best possible response are central to the administration process.

Figure 3.1: Development of ICAN assessment tasks



¹For instance, see Clements, D.H., Baroody, A.J. and Sarama, J. (2014). Background Research on Early Mathematics. Background Research for the National Governor's Association (NGA) Center Project on Early Mathematics. https://www.du.edu/marsicoinstitute/media/documents/dc_background_research_early_math.pdf

Figure 3.2: Overview of domains and tasks in the ICAN assessment tool



Box 3.1: Key facts about the ICAN assessment tool

- Open source
- Available in 11 languages
- Most tasks are aligned to grade 3 level or lower of the UNESCO Global Proficiency Framework
- Can be used in both household and school settings
- Suitable for a broad age group of learners, in order to identify gaps in foundational numeracy even among older children
- Oral, one-on-one administration in order to include all children regardless of reading ability
- Average administration time of 15 minutes per child
- Progressive assessment administration - only children who can do easier number operation tasks are given more advanced tasks
- Low cost facilitates large-scale implementation in low resource contexts

Field enumerators are trained to build rapport with children to create a relaxed and encouraging environment, including elements such as:

- Speaking slowly and clearly to ensure that all children are able to fully understand the expectation from the task
- Giving children adequate time to complete each task
- Allowing children to use paper and pencil to work out problems, if they wish to do so

ICAN contextual questionnaires

ICAN's contextual questionnaires are used to collect information on key socioeconomic indicators. Information is collected at three levels:

1. For each surveyed child

- Past and current pre-school and school status
- Enrolment in paid tuition classes
- Parents' education

2. For each sampled household

- Basic infrastructure and assets
- Availability of reading material in the household

3. For each sampled community

- Basic infrastructure and facilities
- Availability of schools and pre-schools

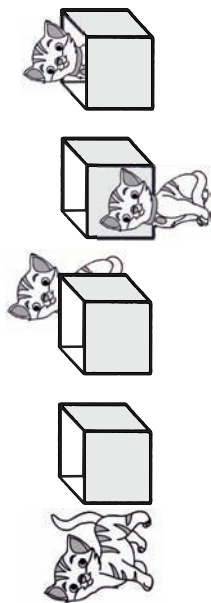
When used as part of a household-based assessment, these questionnaires generate valuable background information about the households and communities surveyed, enabling contextualisation of the results obtained from the assessment. Some examples of how assessment and contextual data generated from household-based implementation of ICAN can be used together are provided in Section 6 of this report.

When the ICAN assessment tool and household questionnaire are used together in a household survey, the process takes an average of 20-30 minutes to complete in each household.

ICAN assessment tasks *

Spatial orientation

Task 1 In this picture, which cat is inside the box?



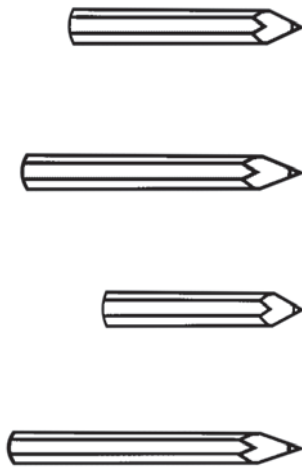
Shape recognition

Task 1 Which of these is a straight line?

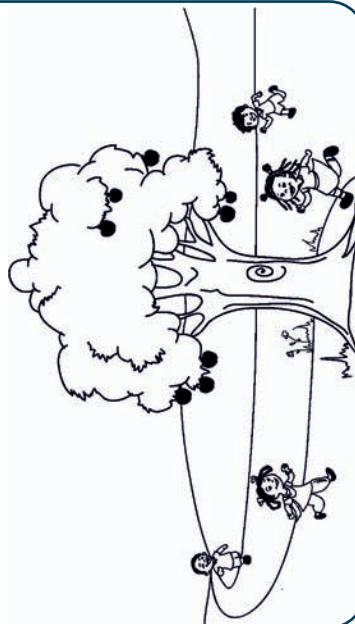


Measurement

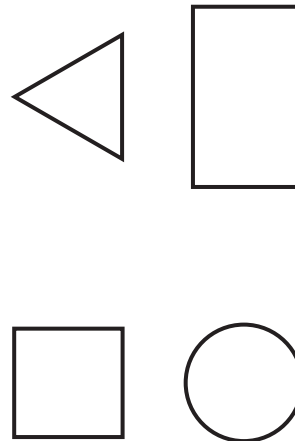
Task 1 In this picture, which is the shortest pencil?



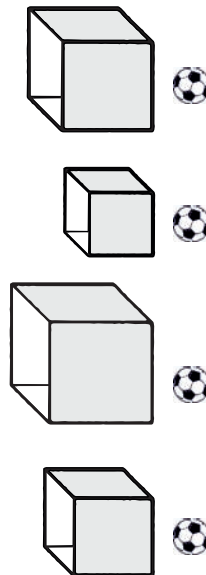
Task 2 In this picture, which child is farthest from the tree?



Task 2 Look at these shapes. Which of these is a triangle?



Task 2 Here are 4 balls of the same size. Now look at the box kept next to each ball. If we completely fill each box with the kind of balls shown, which box will have the most number of balls?



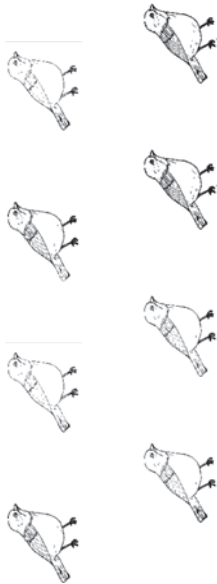
GIVE SET 1 TASKS TO ALL CHILDREN

*ICAN assessment tool is available in 11 languages on the PAL Network website (www.palnetwork.org)

ICAN assessment tasks

Counting objects

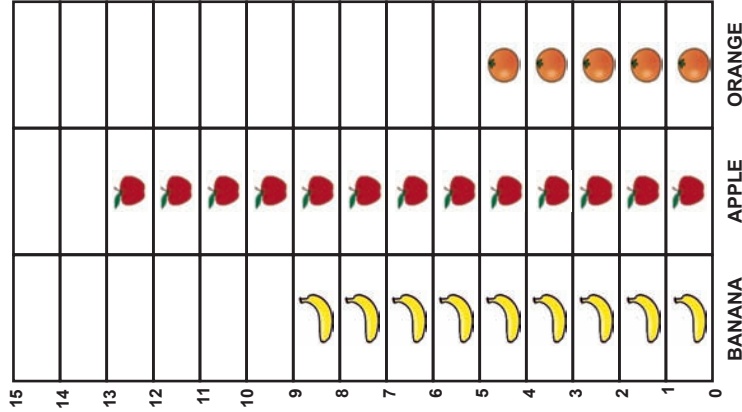
Task 1 How many birds are here? Choose the correct number.



- 6 8 9 5

Simple data display

Look at the chart given below carefully.



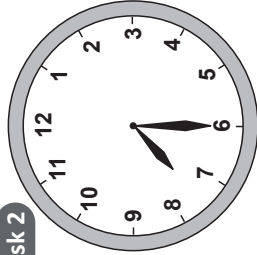
- Task 1** How many apples are there?
Task 2 How many more bananas are there than oranges?

Telling time

What is the time in this clock?



Task 2



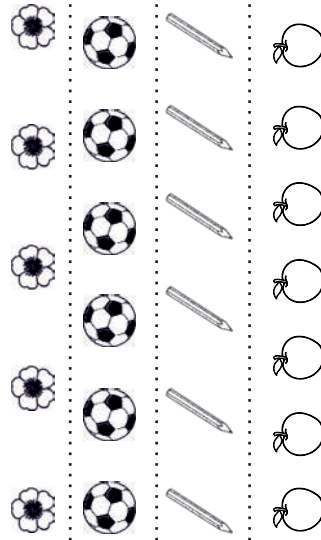
Telling day and date

Look at the calendar given below.

MARCH 2019						
SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

- Task 1** What is the day on 5th March?
Task 2 What is the date on the second Monday of March?

Task 2 There are 4 groups of objects given here. Look at them carefully. Which group has the most number of objects?



GIVE SET 1 TASKS TO ALL CHILDREN

ICAN assessment tasks

Number recognition

Task 1 Recognise numbers.

3

2

0

8

9

At least 4 out of 5 numbers must be correct

Addition

Task 1

$$\begin{array}{r} 32 \\ + 15 \\ \hline \end{array}$$

Task 1

$$\begin{array}{r} 46 \\ - 21 \\ \hline \end{array}$$

Task 1

$$2 \times 4 =$$

Task 1

$$9 \div 3 =$$

Subtraction

48

22

97

84

30

Task 2 Recognise numbers.

At least 4 out of 5 numbers must be correct

Multiplication

Task 2

$$\begin{array}{r} 56 \\ + 17 \\ \hline \end{array}$$

Task 2

$$\begin{array}{r} 78 \\ - 29 \\ \hline \end{array}$$

Task 2

$$\begin{array}{r} 42 \\ \times 6 \\ \hline \end{array}$$

Task 2

$$7 \overline{)93}$$

Division

Solve the following questions.

Solve the following questions.

Word problem

Task 2a - Subtraction Listen to the question carefully, solve and answer.

There were 43 children in the park. Out of these, 25 of them have gone home. How many children are left in the park now?

Task 2b - Division Listen to the question carefully, solve and answer.

A shopkeeper has 48 apples. He keeps 3 apples in each box. How many such boxes will he need to keep all the apples?

GIVE SET 2 TASKS TO ALL CHILDREN. SET 3 TASKS TO BE GIVEN TO ONLY THOSE CHILDREN WHO COULD DO THE CORRESPONDING SET 2 TASK CORRECTLY.

For example, Task 2 on addition will only be given to children who could do Task 1 on addition correctly.

Similarly, the subtraction word problem will only be given to children who could do Task 1 on subtraction correctly.