

Mathematics

NIPUNN- I is an endeavour for assessing and consolidating the learning levels of class I students for the Academic Session 2019-20 and to improve their preparedness for the upcoming session of 2020-21. The essence of the programme is to strengthen the conceptual understanding of the students by recognising any possible learning gaps and by working with **all the students** in a concentrated manner during the month of March 2020. It is important to note that this programme is **not to label/segregate** any student based on his/her performance in the assessment. However, the central idea is to enhance their preparedness for the next class such that the learning gaps do not trail.

The entire programme is divided into three phases:

Phase I- Baseline assessment

Phase II- Work with the students

Phase III- Endline assessment

Phase I- Baseline assessment

1. **Class ka Naksha (Baseline)** assessment shall be undertaken by doing the suggested activities provided in the Annexure D. Teachers' may note their observations as students engage in the activities. While observing, teachers may kindly note that giving correct answer to a task is not the sole criterion for assessing the student's understanding. It is essential to observe how the student approaches the problem, his/her level of confidence and the reasoning given by the student. These observations shall be then filled in the **Class Ka Naksha** as provided in the ANNEXURE B by using the codes given below:

Codes for Class ka Naksha

- ✓✓ If the student is able to complete the task comfortably every time and without support
- ✓ If the student is able to complete the task with support
- If the student faces challenges in doing the task

Kindly Note - If the student faces challenges in doing the task then assessment of further stages need not be conducted.

2. Record the Stage of each student in the *Class ka Naksha* (ANNEXURE B, Column 8)

There are 7 stages in all – Beginners and Stage I to Stage VI to determine the highest level of students' achievement. Kindly note that each stage is cumulative, i.e. parameters of stage 1 are included in the parameters of stage 2 and parameters of both stage 1 and stage 2 are included in stage 3 and so on.

Stage of the student may be determined by looking at the double ticks ✓✓ recorded in each stage. For example: If a student is able to do the tasks of Stage I and Stage II with ✓✓ and does the tasks of Stage III with the single tick ✓, then the student's highest achievement in this case would be considered as Stage II.

While observing, teachers may come across students who are yet to reach Stage I, these students shall be recorded as 'Beginners'.

- 3. Consolidated report (Baseline)** - After recording the observations and Stage for each student in *Class ka Naksha*, a consolidated report shall be made in the format given in the ANNEXURE E. The report shall have the details of total number of students in each Stage at the beginning of NIPUNN - I. Any long absentee student who missed the assessment may be recorded too in the consolidated report.

Phase II- Work with the students

- 1. Recognising the possible reasons for Learning Gaps:** Before starting the learning module teachers are expected to identify the possible reasons for learning gaps. ANNEXURE C is to be filled to understand the difficulties faced by the students such that teachers address those difficulties and plan their learning programme accordingly.
- 2. Work with the students –** During the NIPUNN - I programme, teachers will work with **all the students** for improving their preparedness for the next class and for strengthening their conceptual understanding. However, one to one interaction should be made with the students with learning gaps. Individual learning plans should be made for these students and wherever needed, the help of Special Educator should be taken to re-enforce the learning.
A suggested weekly plan of activities is provided in the learning module attached as ANNEXURE F. Teachers are encouraged to incorporate their innovative and creative ideas to the suggestive activities such that students enjoy the process of learning. They may also revisit or modify the activities as per the level of each student's understanding.

Phase III- Endline Assessment

1. **Class ka Naksha (Endline)** –After working with the students, an Endline assessment shall also be conducted through the similar activities as done during the Baseline assessment (ANNEXURE D). **The same Class ka Naksha that was filled for the Baseline Assessment will be updated** as per the student's performance in the Endline assessment. For Example: If a student had got ✓ in any parameter in the Baseline, he/she will be assessed again and the improvement will be recorded by updating the ✓ to ✓✓. In case there is no significant improvement observed in the student's performance, teachers may refer to ANNEXURE C once again and work specifically on the limitations with the help of a Special Educator if needed.
2. **Consolidated report (Endline)** – After updating the *Class ka Naksha*, the consolidated report will also be updated in the same format as done in the Baseline assessment.

Class ka Naksha- Class 1

ANNEXURE B

[illegible]

****Note** –Stage should be filled based on the highest level of achievement for each student.

For example, if a student has ✓✓ in columns 2 and 3 and ✓ in column 4 then she will be considered in Stage II, corresponding to the Stage of highest level of achievement.

Possible reasons for Learning Gaps														
S. No.	Name of the Student	Attendance and Experience related Fact		Any observed physical difficulty			Any other observation							Any other behaviour you may have noticed
		No prior pre-primary experience	Irregular Attendance - Medical (Fits/ Epilepsy/ any illness) /Non-Medical family reasons - migrant population/ orphans/ dysfunctional families/ Alcoholism etc)	Limb related - any deformity or functional physical limitation	Coordination related - any difficulty in fine or gross motor activity	Nourishment related - underweight/ overweight; under height; small frame/body; any skin/ hair related issue/ protruding stomach	Any difficulty in seeing	Any difficulty in hearing	Any difficulty in speaking or expressing	Student shows difficulty to sit independently for age appropriate length of time (at least 10 minutes)	Student shows difficulty in socializing	Student shows difficulty to attend to a task in an age appropriate manner	Student shows difficulty in managing self-care activities independently/with support	

Guidelines for Observation

S. No.	Learning Outcome pointers	Activities during which observations can be done	How and What to observe
1	Can count and is able to hand over the required number of objects from a pile of objects	Up to 10 - Jumping with double dice, <i>Ungli jagao</i> Up to 20 – Chit activity	Teacher observes whether the student is able to count with one-to-one correspondence *and stops at the correct number. E.g. if the student throws the double dice and gets 8 - student is able to count comfortably and stops after exactly 8 jumps ✓✓ -student jumps and stops at the correct number sometimes with support✓ - student is not able to count with one to one correspondence and does not stop at the correct number (-)
2	Comparing numbers	<i>Kaun si mutthi me zyaada, Kis me zyaada, Tasveer banao</i> , Whose name is longest	Teacher asks comparison questions while hiding objects in her hand. Numbers are chosen which are close to each other such as 9 and 11 or 14 and 16. Teacher observes whether -student is able to compare numbers (without counting) based on her number sense.✓✓ -student is able to compare numbers by counting the pieces ✓ -student is not able to compare numbers correctly (-)
3	Recognising numbers with Number sense (Symbols)	Matching game, Jumping with number cards, Counting-on game	Teacher observes whether student is able to associate the number symbol with quantity. -student is able to count and match 8 dots with the symbol '8'. ✓✓ -student is able to recognise the symbol but is not able to match with 8 dots✓ -student can count and find out how many but is not able to relate it with the symbol (-)
4	Writing down numbers with Number sense	With postman context, Connect the dots –Math Magic Page no. 80	Teacher observes whether - Student is able to write numbers in sequence. ✓✓ - Student is able to write numbers in sequence with support✓ - Student is not able to write numbers in sequence or is not able to write the number at all(-)

***One-to-one correspondence** –student is able to state the number of objects in a pile by counting each object only once. For example:- In a pile of pens, first pen is counted as one and the second pen is counted as 2 and so on.

5	Structuring (Able to count using pattern of 5)	Taking out beads on <i>Ginladi</i>	Teacher asks students to take out numbers up to 10 (or up to 20). Students take out in the way they are comfortable. For example, if students have to take out 18 beads, teacher observes whether - Student takes out the specified number in one swipe, takes out 18 beads at once. (✓✓) - Student takes out the number using structure, for example takes out 10, 15, and then 18. (✓) - takes out by counting 18 beads one by one (✓) - has difficulty in taking out the required number of beads (-)
6	Splitting 10 into 2 numbers in different ways	<i>Gin ladi chhupane wala khel, Mutthi ka khel, 10 pankhudiyan waala phool, Market</i>	Teacher observes whether student is able to - tell the combination immediately (✓✓) - counts on fingers or mentally and then says the combination (✓) - is not able to think of the combination (-)
7	Solves day to day problems related to addition and subtraction	Through word problems	Teacher develops the context and asks the student the question orally. Teacher observes whether the students is able to - understands the question herself and thinks mentally to find the answer ✓✓ - understands the question herself and counts on fingers, or using lines to find the answer ✓ - is not able to understand the question herself (-)

Consolidated report - Class 1

Aspects of Number sense		Number of students in a particular stage as on _____ (Baseline NIPUNN - I) ✓✓ only	Number of students in a particular stage as on _____ (Endline NIPUNN - I) ✓✓ only
Stage I	Is able to count and handover the required number of objects up to 20		
Stage II	Stage I and Is able to compare numbers up to 20		
Stage III	Stage II and Recognising numbers with number sense (Symbols) up to 20		
Stage IV	Stage III and Writing down numbers with number sense up to 20		
Stage V	Stage IV and Structuring up to 20 (able to count using pattern of 5)		
Stage VI	Stage V and Solves day to day problems related to addition and subtraction up to 20		
Beginners	Students who are yet to reach Stage I		
Students who were not assessed for any unavoidable reason			
Total number of students			

Week 1 – Counting objects up to 10		
Activities	Frequency	References
Jumping activity with double dice	2-3 times	Sankhyabodh Manual, page no. 6
Counting with fingers - Students are asked to make all their fingers sleep. Teacher says '4 ungli jaga do' and students show 4 fingers. Later cards with numerals along with number patti can also be used. OR Aaj hamari class mein kitne bacche hain?	Can be done along with other activities for few minutes	Sankhyabodh Manual, page no. 1
Comparison activity (up to 10) 1) Kaun si mutthi mein zyaada tukde? Teacher hides a few pieces or seeds in her hand and calls one student to guess. Later, the teacher shows her the pieces which the student counts to find out the actual number. 2) Kis me zyaada? Objects like seeds or Rangometry square pieces (or any other type of piece) are kept in 2 transparent jars. Students guess which has more pieces. One student comes to count and find out.	1-2 times	
Matching game with number and dot cards up to 10 10 students are given one card each with numerals 1 to 10 written on them. Another 10 students are given one dot card each with 1 to 10 dots on them. Students find their partners.	1-2 times	
Activities based on Math Magic page 22-23 – Songs for counting		Math Magic page no. 22-23

- Sankhyabodh Manual for Mathematics has been uploaded along with the Teacher Workshop Circular No. 1.54/ET/SCERT/2018-19/PRTMathInset/5732-37 dated 21.08.2019.

Plan of activities – A Reference guide for Teachers

Week 2 – Counting objects up to 20		
Bol bhaai kitne – Students move in a circle, with the teacher singing “ <i>bol bhaai kitne</i> ” and students replying “ <i>aap bolo jitne</i> ”. Then teacher suddenly says a number between 1 and 10, say 4, and students try to get into groups of 4.	Can be a done to form groups for any activity like <i>tasveer banao</i> or as a warm up activity	
Jumping activity with double dice/or with dot cards or number cards (from 1 to 10)	1 time	Sankhyabodh Manual, page no. 6
Tasveer banao: Making figure of your choice with Rangometry (or seeds or colourful beads or with small sticks) and counting the number of pieces used. Along with this: 1) Counting on number <i>patti</i> to note number of pieces used 2) Data collection with shapes and number of pieces used 3) Ask questions to students like – who has used the maximum number of pieces, who has used the minimum number of pieces, who has used less than/more than etc.	1-2 times	Sankhyabodh Manual, page no. 21
Matching game with number and dot cards up to 10	1 time	
Counting on Game with 0-2 dice - Teacher draws blocks on the floor and writes numbers up to 10 on them. Students play in pairs, where one student throws the dice, the other student makes as many jumps but while counting-on (that is saying the number on the block). So if the student is at 4 and gets 2 on the dice, she will say 5, 6 while jumping and reaching 6. Teacher can erase some of the numbers up to 10 and ask the students to write the missing numbers.	2-3 times	
Nimbu paani - Teacher brings <i>nimbu</i> for making <i>nimbu paani</i> for all the students. Students estimate and then count the number of <i>nimbus</i> , spoons of sugar, glasses of water used to make <i>nimbu paani</i> for all the students.	1 time	

Week 3 – Counting objects up to 20		
Chit activity with Rangometry (or with beads/seeds/small sticks/ice cream sticks) - Making figure of your choice with Rangometry pieces (or with any other material) but using only as many pieces as on the chit.	2-3 times	Sankhyabodh Manual, page no. 33
Market - Enact a market situation like fruit shop, stationary shop etc. Different items are displayed with price tags (up to 10 or 20 depending on level of the students). Students are given several coins of Rs. 1. Students can give the amount as shown on the price tag to buy things.	1 time	
Ghar Chalo – Counting on Game with 0-2 dice on the number patti	1-2 times	Sankhyabodh Manual, page no. 29
Whose name is the longest? Students can take out their diaries where their name is written. Teacher asks them whose name is longest. Students count the number of letters in their name and their friend's name. Teacher makes a table on the blackboard in which this is noted. Questions involving comparison can also be included.	1 time	Math Magic page no. 110, 79

Week 4 - Towards structured counting (up to 10)		
Moti nikalna 10 tak on <i>Ginladi</i> with context of parrots on banyan tree	Daily for 15-20 mins	<i>Sankhyabodh</i> Manual, page no. 42
Ghar Chalo – Counting on Game with 0-2 dice on the number <i>patti</i>	1-2 times	<i>Sankhyabodh</i> Manual, page no. 29
Pattern activity – Decorate figure with Rangometry <i>barfi</i> pieces or <i>bindis</i> or leaves but with only 2 colours. Teacher starts with 1-1 pattern and students continue the pattern. At the end students can count how many pieces have been used to decorate and also of each colour and note it using number <i>patti</i>. Later, students can make patterns in teams of 2 using pieces up to 20 and then note down how many pieces they have used.	1-2 times	Math Magic Page no. 111-113
Chit activity with Rangometry (or with beads/seeds/small sticks/ice cream sticks)	1-2 times	
Postman – Teacher involves students in a story. The postman needs help in delivering the letters. The desks in the class become the houses in the street. On some of the ‘houses’ (desks), the house number is written, but some of them are missing. Will the students help the postman by writing the house numbers on the other desks?	1-2 times	

Week 5 - Structured counting (up to 10/20)		
Simple word problems with numbers up to 10 can be done orally every day for few minutes	Daily	
Paanch pankhudiyon waala phool - students make flowers using Rangometry pieces or <i>bindis</i> for making petals. Each flower has only 5 petals. On the blackboard, teacher starts making some flowers for which one or two petals have already been made, and asks students to come and complete them. Later students can be asked to make flowers in different patterns with only 5 petals and two colours. Similarly this can be done with flowers with 10 petals etc.	1 time	
Moti nikalna up to 10 or 20 on <i>Ginladi</i> based on level of students	3-5 times	Sankhyabodh Manual, page no. 42
Market - Enact a market situation like fruit shop, stationary shop etc. Different items are displayed with price tags (up to 20). Students are given set of cards with dots from 1 to 10. Students have to give one or more cards on which the dots together equal the amount on the price tag to buy a particular item. For example to buy a item with price tag 12, the student can give dot cards with 5 dots and 7 dots on them or dot cards with 8 dots and 4 dots on them etc.	1 time	Math Magic page no. 126-128
Making 20 - A pair of students come from each team. One student throws the dice and put as many balls in a basket. Then the second student gets a turn. Each team has to collect 20 balls. The first team to complete the target wins. Symbol for addition can be introduced as in the activity train making.	1-2 times	Sankhya bodh Manual, page no. 37
Postman activity can be revisited, but this time the teacher draws the houses on the blackboard instead. Activities based on writing numbers up to 20	1 time	Math Magic page no. 80

Week 6 - Structured counting (up to 20)		
Simple word problems with numbers up to 20 can be done orally every day for few minutes	Daily	
<i>Paanch pankhudiyan waala phool</i> - Making flowers with 5 petals or 10 petals – using bindis	1-2 times	
<i>Moti nikalna 20 tak</i> on <i>Ginladi</i> , <i>ped par kitne rah gaye</i> <i>Gin ladi chhupane wala khel</i>	4-5 times	Sankhyabodh Manual, page no. 46, 49
Market game	1 time	
<i>Dibba khaali</i> game of taking away for introducing symbol for subtraction.	1-2 times	Sankhyabodh Manual, page no. 39

Word problems

Lali ki thali

A context of sharing and eating amrood (or any other fruit depending on the season) can be taken. While narrating the story, the teacher can draw a simple line drawing of Laali and her special thaali (it can be made in a unique square shape).



Teacher draws a 'thaali' on each desk and gives some square pieces of Rangometry or blocks or any other material. As the story is narrated, children place or take out the appropriate number of pieces from their thaali.

Children can think mentally and answer or count-on with the pieces or count all depending on their level of comfort. Teacher notes their responses on the blackboard using the format given below.

Teacher narrates...

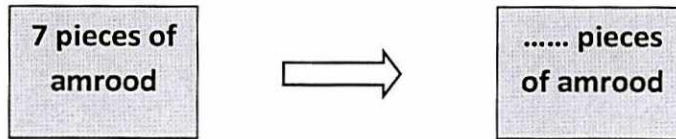
Lali is a little girl. And she has a special plate (*thali*).

Lali loves to eat her favourite things in her special thali. And these days the thing Lali likes to eat the most is – amrood!

Her mother cuts the amrood in a special way – she cuts them in little pieces. Lali loves to eat the amrood cut in pieces. It is extra tasty because she sprinkles a little black salt on top.

There were 7 pieces in Lali's plate.

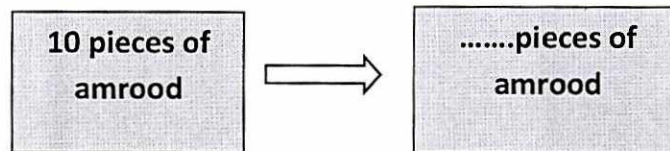




Mummy gave 3 pieces

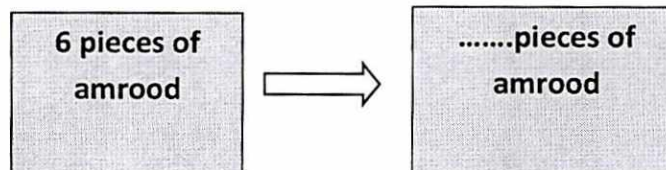
Then, Laali ate 4 pieces from her plate

Can you tell how many pieces of amrood are there in her plate now?



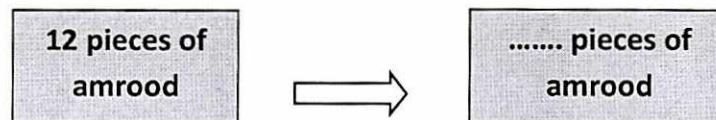
Laali ate 4 pieces of amrood

Nani also gave her some pieces of amrood



Nani gave her 6 pieces of amrood

Lali got her favourite amrood after dinner as well. She had 12 pieces of amrood in her special plate. Papa gave her some pieces too....



Papa gave her 2 pieces

Besan ke laddoo

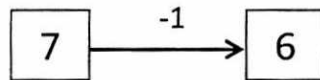


Sonu likes *laddoos* a lot and she loves the *laddoos* made by her *Nani* the most. One day her *Mama* came to meet them and also brought *laddoos* made by her *Nani* for them. Everyone in the house enjoyed the *laddoos* very much and Sonu's mother kept rest of the *laddoos* aside.

Next day after coming back from school, Sonu thought of having a *laddoo*. Then, her grandmother told her that, "Your mother was thinking of giving 2 *laddoos* each to the three children who come for tuition. Just check if we have enough *laddoos*?"

When Sonu saw in the box, there were *laddoos*. 7

Will Sonu be able to eat the *laddoo*? How many *laddoos* are there after Sonu eats the *laddoo*? This can be shown either on the number line or using arrow notation.

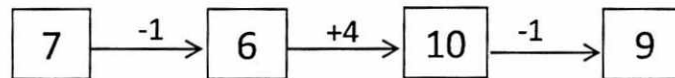


Then her mother asked her grandmother also to eat a *laddoo*.

Grandmother asked, "Won't the *laddoos* be less for the tuition children then?"

Sonu's mother told her that she had already kept some *laddoos* aside. Then, she put 4 *laddoos* in the box. She gives one *laddoo* to Grandmother also.

How many *laddoos* are there to eat now?

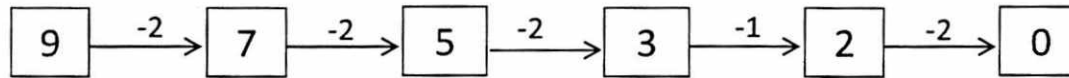


Sonu's mother gave one *laddoo* to her grandmother. 3 children came after that. Mother gave each of them 2 *laddoos* each?

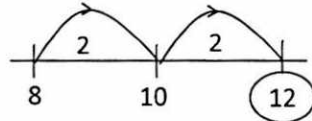
Later in the evening, Sonu's mother gave one more *laddoo* to her.

Her mother and father also ate one *laddoo* each at night while watching TV.

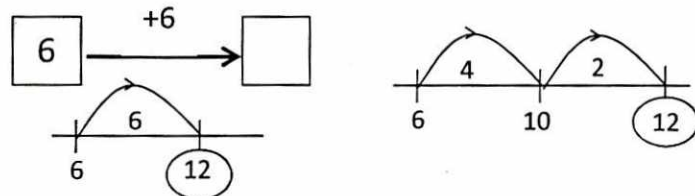
How many *laddoos* are there in the box now?



If there are 8 *laddoos* in the box and after that we have kept 4 *laddoos* in the box. Then, how many *laddoos* will be there in the box now?



If there are 6 *laddoos* in the box and we have kept 6 more *laddoos*, then how many *laddoos* will be there in the box?



16 *laddoos* were in the box and we ate 7 *laddoos*. How many *laddoos* are in the box now?



During this activity with the students of class 1, the teacher can observe their understanding of number relationships. The objective of the activity is to understand how students are thinking and presenting their logic and therefore the size of the drawing/loop representing the jumps need not be proportionate.

For example, if a jump of 4 is taken from 6, the student will reach at '10'. From there another jump of 2 is taken and now student will reach at '12'. This is represented by drawing loops with arrows on the number line (as shown above). The teacher may consider that it is not important for the size of the loop to change with the size of the number.