

PART 3: Individual and self-paced work

Level 1a

Objective:

Learn the number symbols from 0 to 9, their Kannada names (ಒಂದು, ಎರಡು, ಮೂರುetc) and the true meaning of each number. An ideal pacing would be something like this:

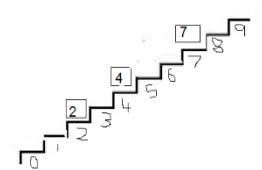
1. Numbers 1 to 5(1 week)
2. Then 0 to 5. (3 days)
3. Then consolidate - 0 to 9 (2 weeks)

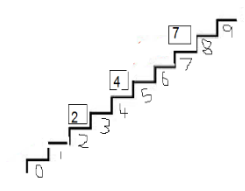
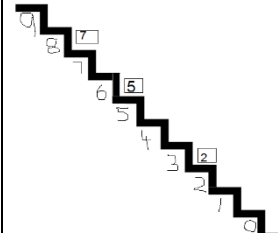
Activities 1 to 5 (listed below) need to be done for numbers 1 to 5 for one week. Then 0 to 5 for 3 days. And Then 6 to 9 for one week. Then 0 to 9 for again one week.

So the students will work at least **3 weeks and 3 days** for the level 1a

1a	Activity	Process	Materials
FOR NUMBERS 0-5			
1	Color the squares	Teacher writes the numbers 1 to 5 on the left end of the page in math notebook and put as many as dots on the right side of the number. Students need to color the squares with TWO different colors in alternate squares. (use pencils instead of crayons)	
2	Cups with numbers and stones / Number cards and clips / Paper plate with number written on it.	Arrange cups from 1 to 5 on the floor. Teacher sits on the side of the student (not across). Show each cup and read the symbol and count and put as many as stones as the number indicates, one by one into each cup. Similarly use the other alternative items to count.	Cups with attached number cards
3	Trace the number symbol with clay and stones	Teachers writes the number symbol on the floor (better big in size). Students trace it using clay and then stones. Repeat it 2-3 times a session.	
4	Worksheet for number 1 to 9. (to be printed and filed)	Students color the picture and write the numbers in the worksheet.	Worksheets: 1a- 4.1 to 4.11
5	Write the numbers in notebook.	Teacher writes the numbers in the notebook and students copy them - 5 to 10 times at a time (not more than that)	

		Introduce an example where the number of fish in each pond is the same. The word equal (ಸಮ) is introduced here.	
b	STEP 2 :INDEPENDENT Picture cards	<p>Students are given picture cards with small fish drawn on it. Keeps any two cards on the floor with some space in between. Student compares the cards and draws the less (ಚಿಕ್ಕ ಸಂಖ್ಯೆ) than or greater than (ದೊಡ್ಡ ಸಂಖ್ಯೆ) symbol or an = sign(ಸಮ ಸಂಖ್ಯೆ) between the two cards using chalk.</p> <p>Student copies the equation in her notebook. Eg $7 > 3 / 2 < 8 / 4 = 4$</p> <p>Key words: big, small equal. (ದೊಡ್ಡ/ಚಿಕ್ಕ/ ಸಮ ಸಂಖ್ಯೆ)</p> <p>Students need to work with at least 10 pairs of cards in a session and the same need to be copied to their notebook. You could use sets of cards with other objects as well – not necessarily fish.</p>	
c	STEP 3: INDEPENDENT Number cards	<p>Same activity as above. Instead of picture cards here student uses number cards.</p> <p>Equations are again copied in the notebook.</p>	
d	Consolidate through worksheets		Worksheets from 1b 3.1 to 1b 3.5
4	Ascending and Descending order		

<p>a</p>	<p>STEP 1 : TEACHER LED</p> <p>Ascending order.</p> <p>The Hungry rabbit and carrots.</p>	<p><i>Use the story of the rabbit and the carrots to explain the concept. Draw steps going up – left to right on the floor with chalk as shown.</i></p> <p><i>Narrate story: There was a rabbit in a forest and there were 3 carrot farms near the forest. The rabbit was hungry and went looking for carrots in each farm. (Carrot pictures depicting different numbers are placed in 3 circles far apart).</i></p> <p><i>The rabbit looked at each farm and counted how many carrots are there in each farm.(Teacher can ask students how many carrots are there in each and also ask about how many carrots each of them can eat in one go etc.)</i></p> <p><i>The rabbit is very small so he always starts eating from the place that has the smallest number of carrots.</i> <i>So here which farm has the least number of carrots? Let the students tell which one is lesser and give all of them an opportunity to say which among the 3 sets is the least in number. And keep the carrot card on the ladder corresponding to its number. (Act as if the rabbit ate the carrot).</i></p> <p><i>The rabbit is still hungry. Again he looks and wonders which is the lesser among the two remaining. Let the students tell which one is least and give all of them an opportunity to say which among the two remaining set is least in number. And keep the picture on the ladder corresponding to its number.</i></p> <p><i>The rabbit is still hungry and he is eating the last one which is the highest among the three set of carrots. (And keep the picture on the ladder corresponding to its number)</i></p> <p><i>Summarize: So this is the least number of carrots (call the number out loud), this is more than this then this is more....this way we go from less to</i></p>	<p>Cards with carrots and numbers on opposite sides</p> 
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		<i>more. This is called ascending. (ಏರಿಕೆ ಕ್ರಮ)</i>	
b	STEP 2 : INDEPENDENT Ascending order with number cards	Draw steps on the floor from 0-9 with a chalk. (left to right/ bottom to top) A pile of number cards are kept on the floor. Students take 3 cards from the pile and arrange them in ascending order on the drawn ladder. The same needs to be copied in their notebooks. Compare at least same 6 sets of (3) cards each in a session	
c	STEP 1 : TEACHER LED Descending order. The Hungry Elephant and sugarcane.	Similar story as the rabbit. Here elephant is big so starts eating from the BIG number.	
d	STEP 2 : INDEPENDENT Descending order with number cards	Draw steps on the floor from 9 to 0 with a chalk. (left to right/ top to bottom) A pile of number cards are kept on the floor. Students take 3 cards from the pile and arrange them in ascending order on the drawn ladder. The same needs to be copied in their notebooks. Compare at least 6 sets of (3)cards each in a session	
e	Consolidate through worksheets		Worksheets from 1b 4.1 to 1b 4.10
f	SUMMATIVE 1a-1b		Worksheet S1a-1b

Level 1c

1c	Activity	Process	Materials
1	Addition (0-9)		
a	<p>STEP 1 : TEACHER LED</p> <p>Introduction</p> <p>Addition</p>	<p>Teacher sits with 2-4 students. Give Student A 4 stones and Student B 3 stones. <i>(Use it as an opportunity to assess by asking students how many stones they each have and see if all the students are able to count. Also compare the two numbers and ask which one is bigger – which one is smaller. If any student is unable to count or identify the big and small she needs to go back to level 1a or 1b)</i></p> <p>Demonstrate:</p> <p>Teacher: (To Student A): "How many stones are there with B?" (Check if the student gives the correct count)</p> <p>(To Student B): "How many stones are there with A?" (Again check if the student gives the correct count)</p> <p>"A, now can you please give all of your stones to B?" (A gives all of his stones to B)</p> <p>"How many stones are left with A now?" (Check if students are able to give the answer as zero)</p> <p>"And how many stones does B have in TOTAL (ಮೊತ್ತ/ ಒಟ್ಟು ಸೇರಿ) now?" (Students count and answer. If counting is wrong – count again)</p> <p>Teacher: "What have we done here?"</p>	

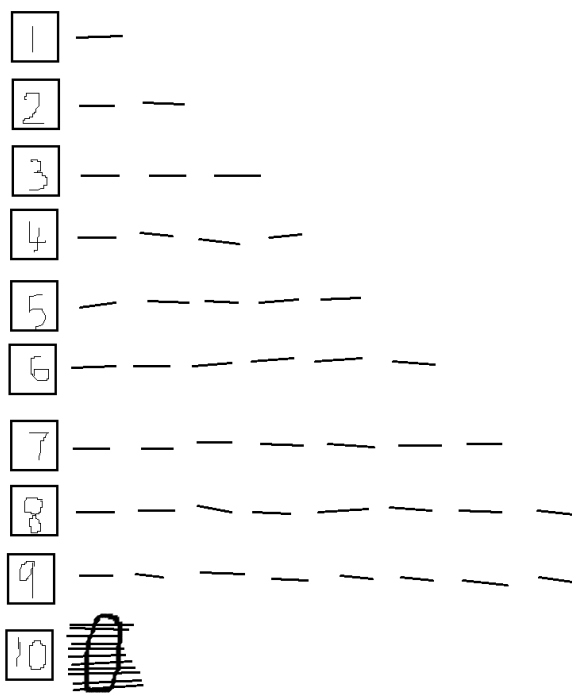
		<p>(Let the students describe what was done). <i>"We added (jodisu) 4 stones and 3 stones and we got 7 as total (motta)."</i></p> <p>While saying it teacher writes down the mathematical expression $4+3=7$. (And also explains the meaning of + as addition (jodisuvudu or sersisuvudu) and the meaning of = sign as whatever is there on either side of = sign is the same or equal (sama).</p> <p>Repeat it several times with different combinations of numbers. Write it down on the floor whenever they complete one addition. More importance is given to talking. Students need not write it down. Here make sure that the total is always less than 10.</p>	
b	Addition using picture cards.	<p>Picture cards are kept on floor separated by '+' sign and '=' sign is written at the right end. Students can count total number of flowers (for example) on each card, counts the total number and writes the answer after the '=' sign.</p> <p>Students can do 10-15 problems and the same can be written in their notebook.</p>	This activity can be done alone or in pairs.
c	Addition using number cards	<p>Same as above. Instead of picture cards, number cards are used.</p> <p>Students can continue to use stones or pebbles to do the operation, if they still need concrete visualisation</p>	This activity can be done alone or in pairs.

e	Consolidate through worksheets	Independent work with worksheets.	Worksheets 1c 1.1 to 1c 1.10
2	Subtraction (within 10)		
a	Introduction	<p>Teacher sits with 2-4 students. Student A is given 8 stones (<i>use it as an opportunity to assess by asking students how many stones are there with the student and check if all the 4 students are able to count.</i>)</p> <p>Demonstrate: “A, can you please give 3 stones to B? (Another student).” After A gives 3 stones to B, teacher asks again “How many stones are LEFT (<i>baaki/ulithu</i>) with A now? Allow the students to arrive at the answer 5.</p> <p>Teacher can write down the mathematical expression $8-3=5$ on the floor with a chalk. Explain the meaning of ‘-’ (minus) sign as <i>taking away</i> (<i>kaLiyuvudu</i>) and subtracting. Repeat it several times till the students get an idea of the operation. More importance is given to talking. Students need not write it down.</p>	
b	Subtraction using number cards.	Number cards are kept on the floor separated by ‘-’ sign and ‘=’ sign is written at the right end. Students can do 10-15 problems and the same can be written in their notebook.	
c	Consolidate through worksheets	Independent work with worksheets.	10 Worksheets 1C 2.1 to 1C 2.10

3	Decomposition		
a	Introduction	<p>Students are asked to draw a 'necklace (sara) with 5 beads in it. Ask them to color all the beads with red color. Now ask them if they want to change the color of one bead to something else. (Consult with students to decide what the new color should be).</p> <p>Draw one more sara with 5 beads and now change the color of first bead to green and the rest can remain red color. Write 1 near the green bead and write 4 near the red beads. Now say "If we join 1 and 4 we get 5". Draw one more 'sara' with two green beads and 3 red beads. Say 'if we join 2 and 3, we get 5'. Repeat this till all the beads are colored green.</p> <p>Draw and write as shown below.</p>	
b	Consolidate through worksheets	Reinforce through worksheets for making 5, 7 and 9	Worksheets from 1c 3.1 to 1c 3.6
4	Consolidate mixed addition and subtraction problems with 3 numbers (mishrakriye) through worksheets		Worksheets from 1c 4.1 to 1c 4.6
b	SUMMATIVE 1a-1c		Worksheet S1s-1c







Level 1d

1d	Concept	Process	Materials
1	Place Value (ಹತ್ತು - ಬಿಡಿ)		
a	STEP 1 : TEACHER LED Concept of 10	<p>Students are given a pile of ice-cream sticks. They are asked to count. Pick one stick and say <i>ondhu</i>, pick one more and say <i>eredu</i> and continue till 9 sticks are in hand (<i>ombattu</i>).</p> <p>When the student picks the 10th stick, teacher says "<i>Hatthu</i>" loudly and lets all the students say it. And then asks the students to tie the 10 sticks using a rubber band and make a bundle. Students can continue making the bundles of 10 and keeping in front of them. Teacher asks how many bundles of 10s they have made and how many are left. Students can repeat this activity several times.</p> <p>Teacher can introduce the word "<i>hatthu</i>"(ಹತ್ತು) for the bundle and "<i>bidi</i>" (ಬಿಡಿ) for the loose ones.</p> <p>In the end when students finish creating the bundles, teacher asks "<i>How many hatthus do you have</i>" and "<i>How many bidis do you have</i>"?</p>	Ice Cream sticks with rubber bands
b	Number cards 0-10	Teacher keeps the number cards on the floor from 1 to 10. (top to bottom). Students keep corresponding number of sticks near each number card. When it reaches 10, they make a bundle of 10 sticks and keep it. (Refer to the picture).	Number cards 1 to 10 Ice cream sticks

		<p>Students later need to copy the same in their notebook</p> 	
c	Extend Numbers 10 to 20	<p>Student similarly deconstructs numbers 10 to 20.</p> <p>Students make the numbers using the sticks on the floor and then they copy it to their notebook. Teachers need to repeatedly ask "How many 'hatthu' and how many 'bidi' are there in each number?"</p>	Number cards 10 to 20

d	Consolidate through worksheets		Worksheets from 1d 1.1 to 1d 1.13
2	Reinforcing 1-20		

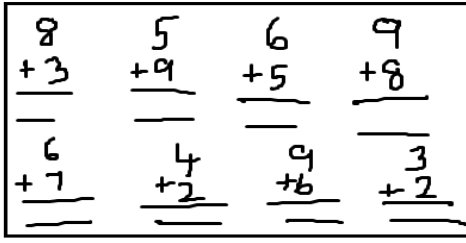
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		<p>Students can play this game in groups of 4.</p> <p style="text-align: center;">ಶಿಕ್ಷಕರ ಕಾರ್ಡ್</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;"></td> <td style="text-align: center;"></td> <td style="text-align: center;">13</td> <td style="text-align: center;">15</td> </tr> <tr> <td style="text-align: center;">18</td> <td style="text-align: center;">16</td> <td style="text-align: center;">11</td> <td style="text-align: center;">19</td> </tr> <tr> <td style="text-align: center;">10</td> <td style="text-align: center;">17</td> <td style="text-align: center;">12</td> <td style="text-align: center;">14</td> </tr> </table> <p style="text-align: center;">ಆಶ - ಆಟ</p> <p>ಆಟ ಆಡುವ ಕ್ರಮ</p> <ul style="list-style-type: none"> ★ ಈ ಆಟದಲ್ಲಿ 2 ರೀತಿಯ ಕಾರ್ಡ್‌ಗಳಿರುತ್ತವೆ. ಮೊದಲನೇ ಕಾರ್ಡ್ ಶಿಕ್ಷಕರ ಕಾರ್ಡ್ ನಂತರದ 4 ಕಾರ್ಡ್ ಮಕ್ಕಳ ಕಾರ್ಡ್‌ಗಳು. ★ ಈ ಹಂತಕ್ಕೆ ಬಂದ ಮಕ್ಕಳಿಗೆ, ಮಕ್ಕಳ ಕಾರ್ಡ್‌ಗಳನ್ನು ನೀಡಿ ಅಲ್ಲಿರುವ ಅಂಕಗಳ ಸಂಖ್ಯೆಗಳಿಗೆ ಅನುಗುಣವಾಗಿ ಕಲ್ಲು/ಬೀಡಿ/ಮಣಿಗಳನ್ನು ನೀಡುವುದು. ★ ಶಿಕ್ಷಕ/ಗಳೆಯ ಶಿಕ್ಷಕರ ಕಾರ್ಡ್‌ನಲ್ಲಿರುವ ಅಂಕಗಳನ್ನು ಅಡ್ಡಸಾಲಿನಲ್ಲಿ ಕ್ರಮವಾಗಿ ಹೇಳುವುದು. ★ ಶಿಕ್ಷಕ/ಗಳೆಯ ಹೇಳಿದ ಅಂಕಿಯನ್ನು ಆಲಿಸಿದ ಮಕ್ಕಳು ತಮ್ಮ ಕಾರ್ಡ್‌ನಲ್ಲಿನ ಅಂಕಿಯ ಮೇಲೆ ಬೀಜವನ್ನು ಇಡುವುದು. ★ ಕಾರ್ಡ್‌ನಲ್ಲಿನ ಎಲ್ಲಾ ಅಂಕಗಳ ಮೇಲೆ ಕಲ್ಲು/ಬೀಜಗಳನ್ನು ಮೊದಲು ಇಟ್ಟ ಮಗು ಆಟದಲ್ಲಿ ಗೆದ್ದಂತೆ. ★ ಗೆದ್ದ ಮಕ್ಕಳನ್ನು ವೈಶಿಷ್ಟ್ಯಿಸುವುದು ಮತ್ತು ತಪ್ಪಾಗಿದ್ದಲ್ಲಿ ಕಾರಣ ತಿಳಿದು ಸುಧಾರಣೆಗಾಗಿ ಪರಿಹಾರ ಕ್ರಮ ಕೈಗೊಳ್ಳುವುದು. 			13	15	18	16	11	19	10	17	12	14	
		13	15												
18	16	11	19												
10	17	12	14												
3	Before, after ,in between														

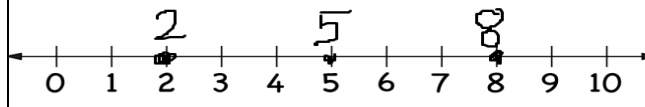
a		<p>Pick one card from the pile of number cards (from 1 to 20) place the card on the floor and write and before and after numbers. Repeat it for at least 10 cards and then copy it to the notebook.</p> <p style="text-align: center;"> 9 <input type="text" value="10"/> 11 14 <input type="text" value="15"/> 15 10 <input type="text" value="11"/> 12 16 <input type="text" value="17"/> 18 4 <input type="text" value="5"/> 6 </p>	
b	Consolidate through worksheets	Reinforce through worksheets for missing numbers	Worksheets from 1d 3.1 to 1d 3.4
4	Greater than – less than		
a	Big or small with number cards (1 to 20)	Use number cards and compare two cards at a time and draw the bigger than smaller than or equal sign between them (recollect the crocodile mouth story, if necessary)	Number cards, chalk

		<p>Once the activity is done on the floor, students copy it in their notebooks.</p>	
b	Consolidate through worksheets	Reinforce through worksheets for big or small number	Worksheets from 1d 4.1 to 1d 4.5
5	Ascending and Descending order		
a	Ascending order for number 1 to 20.	3 cards to be picked from a stack of cards (from 1 to 20) and arranged in ascending order. And then copy it to the notebook.	
b	Descending order for number 1 to 20	3 cards to be picked from a stack of cards (from 1 to 20) and arrange them in ascending order. And then copy it to the notebook.	
c	Consolidate through worksheets	Reinforce through worksheets for big or small number	Worksheets from 1d 5.1 to 1d 5.8
6	Addition (0-20)		
a	Addition	Use number cards from 1 to 9 and add any two at a time and write the answer on the floor using a chalk. Do at least 10 sums at a time and then copy it to the notebook. (Students shall use sticks or stones to solve the problem if they want to)	

		$\boxed{5} + \boxed{3} = 8$ $\boxed{9} + \boxed{5} = 14$ $\boxed{7} + \boxed{6} = 13$ $\boxed{8} + \boxed{3} = 11$	
b	Consolidate through worksheets	Reinforce through worksheets for addition	Worksheets from 1d 6.1 to 1d 6.12
7	Subtraction (0-20)		
a	Subtraction	<p>Subtract any number from a bigger number within 20. Pick two number cards from the pile of cards from 1 to 20. Subtract the smaller number from the bigger number. After writing it on the floor, copy it to the notebook. (Students shall use sticks or stones to solve the problem if they want to)</p> $\boxed{8} - \boxed{3} = 5$ $\boxed{15} - \boxed{3} = 12$ $\boxed{12} - \boxed{9} = 3$ $\boxed{18} - \boxed{5} = 13$	
b	Consolidate through worksheets	Reinforce through worksheets for subtraction	Worksheets from 1d 7.1 to 1d 7.8

8	Consolidate – addition – subtraction –mixed problems (mishrakriye)		Laminated problem cards and worksheets from 1d 8.1 to 1d 8.9
9	Decomposition		
a		Use worksheets to practice decomposition	Worksheets 1d 9.1 to 1d 9.8
	SUMMATIVE 1a-1b-1c-1d		Worksheet S1a – 1d

Level 2a

2a	Concept	Process	Materials
1	Number line (1-10)		
a	Introduction	<p>Students mark different numbers on the number line. Use the laminated number lines. Teacher reads the number and students marks the respective numbers on the number line. Students can do this activity in pairs once the teacher is sure that they are able to do it by themselves.</p> <p>Once they are comfortable using the laminated number line they can start drawing the number line and marking the numbers in their notebooks.</p> <p>REMEMBER : Number line always starts with</p> 	
b	Addition using number line	Number line is to be drawn in the notebook	