



Counting Combinations

Lesson Plan: Class 05 / LCR / 02



Overall goal of the lesson	Children will learn basic counting problems
Prior knowledge required	Systematic Listing, Counting, Reasoning

MODULE 1: **Module time:** 35 minutes

Goal:	Counting different things: paths in a map, ways of establishing something, etc
Description:	Children will learn how to approach problems of counting involving different blocks of brick to make brick towers and to count number of possible paths in a map while going from one point to another
Material required:	<p>Physical:</p> <ol style="list-style-type: none">1. One of copy of the worksheet per child2. Writing material to solve the worksheet <p>Electronic:</p> <p>PPT Presentation</p>
Procedure Summary:	Explain each problem and how to solve them with step wise improvements.
Procedure Details:	<ol style="list-style-type: none">1. Slide 1 to Slide 3:<ol style="list-style-type: none">a. Revise the previous learnings from lesson 1: We learnt how to count all the brick towers with bricks of different color(s)<ol style="list-style-type: none">i. We first listed all the different brick towers possible with different colorii. When we were listing the towers, we were careful not to repeat the same tower againiii. After the listing is complete, we counted the number of towers2. Slide 4 to Slide 6<ol style="list-style-type: none">a. Explain the students how we have six different brick towers with three different colored bricks and how we have 24 different brick towers with four different colored bricksb. Ask the student if they noticed that how the result from three different bricks (which was 6) was multiplied by 4 to get 24 with four different bricksc. Ask the students if they can find out how many brick towers would be possible with 5 different colored bricks. Ask them to list down the options and while they are in the mid-way ask them to stop. Explain them actual answer is 120 and hence, explain how drawing all the possible brick tower would be cumbersome. Also, explain that as the number of bricks keep increasing the count will keep increasing and hence, it is difficult, though not impossible, to list out all the options. Mention the students that there has to be better and easier way to count the number of brick towers.3. Slide 7 to Slide 8<ol style="list-style-type: none">a. Explain the students that they can obtain the number of different brick towers with different bricks by simple multiplication. Take the example of 3 different

	<p>colored bricks and how multiplying $1 \times 2 \times 3$ will give 6 which is the total number of different brick towers. Extend this principle to bricks with 4 and 5 different colors.</p> <p>4. Slide 9 to Slide 10</p> <ol style="list-style-type: none"> Ask the students if they can count the number of possible paths from Pune to Mumbai via Varshi and ask them to find this by counting manually. Answer should be 9. Explain in the next slides how the manual counting has been done. Explain the students if the number of roads had been very high, how difficult it would have been to manually count each path. Explain the students that we can find the number of paths in an easier way by multiplying the number of roads from Pune to Varshi with number of roads from Varshi to Mumbai, that is, $3 \times 3 = 9$ which is the total number of paths from Pune to Mumbai. Extend this example to next questions (Pune to Goa) and explain in similar manner.
Assessment:	<ul style="list-style-type: none"> Answer questions on the activity sheet Refer the work sheet solutions document for assessing solution of each problem
Information Broadcast:	