

# Session 3: Number Diagrams

Session Title	Number Diagrams
Objective	<ul style="list-style-type: none"><li>• Understand different ways to represent numbers using diagrams and number sentences.</li><li>• Explore addition, subtraction, and multiplication patterns for small numbers.</li><li>• Strengthen visual learning and numerical flexibility using hands-on activities.</li></ul>
Concept	<p>Number diagrams are visual representations that show the different ways to break down or build a number using operations like addition, subtraction, or multiplication.</p> <p><b>Examples:</b></p> <div><math display="block">4 = 2 + 2</math><math display="block">4 = 2 \times 2</math><math display="block">4 = 1 + 1 + 2</math><math display="block">4 = 5 - 1</math><math display="block">4 = 8 - 4</math><math display="block">4 = 8 \div 2</math><math display="block">4 = 16 \div 4</math></div>
Materials Required	<ol style="list-style-type: none"><li>1. Board &amp; Chalk</li><li>2. Number cards</li><li>3. Colored markers</li><li>4. Chart paper</li><li>5. Dice</li><li>6. Counters(Counters means small physical objects used to help students visualize and solve math problems. They can be anything like:(Colored chips, Bottle caps, Beads, Pebbles, Coins, Buttons)</li></ol>
Methodology	Activity-based Learning: Drawing diagrams, using counters. Exploratory Learning: Discovering patterns in numbers through multiple operations.

# Introduction Activity (15 minutes):

## Number Diagram

Write a number (e.g., 4 or 5) in the centre of a chart. Ask students to shout out all the ways they know to make that number using +, -,  $\times$ . Write each version as a diagram around the number like a web.

# Main Activity: (60 minutes)

## Counter Challenge (20 minutes)

### **Divide the students into small groups**

1. Children in every group are given 10 counters and a number (e.g. 6).
2. Ask them to use the counters to show different ways to make the number:
3. Grouping (e.g.  $3 + 3$ )
4. Arrays (e.g.  $2 \times 3$ )
5. Removal (e.g.  $10 - 4$ )
6. Students draw diagrams of each representation.

## Diagram Race Game (20 minutes)

(Show one example of how to do it.)

1. Write numbers 1-10 on the board.
2. Divide the class into teams.
3. Each team gets a number and 3 minutes to write or draw as many correct diagrams as possible (e.g.  $6 = 3 + 3$ ,  $2 \times 3$ ,  $7 - 1$ ).
4. Teams present and explain their diagrams.

## Time to Solve (20 Minutes)

1. Match the number diagrams to their values.
2. Complete number webs.

3. Create 3 different diagrams for each of the given numbers: 5, 6, and 8.

## Expected Learning Outcome:

### Knowledge building:

1. Deeper understanding of number structure.
2. Flexible use of basic operations to express numbers.

### Skill Building:

1. Visual reasoning
2. Creative problem-solving
3. Mathematical communication

## Review Questions: (5 minutes)

Ask:

1. How many ways can you show the number 7?
2. Is  $2 \times 3$  the same as  $3 + 3$ ? Why or why not?
3. What's the smallest number you can show using both multiplication and subtraction?

## Follow-up Tasks: (10 minutes)

### Homework:

1. Choose a number between 5 and 10. Show 4 different ways to make that number using diagrams.
2. Complete a number web for the number 6 using  $+$ ,  $-$ ,  $\times$ .
3. Explain which representation you find easiest and why

---

Revision #11

Created 28 April 2025 13:05:36 by iLab

Updated 27 May 2025 10:49:38 by iLab