

Session 3: Number Diagrams

Session Title	Number Diagrams
Objective	<ul style="list-style-type: none">• Understand different ways to represent numbers using diagrams and number sentences.• Explore addition, subtraction, and multiplication patterns for small numbers.• Strengthen visual learning and numerical flexibility using hands-on activities.
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>Examples:</p> $4 = 2 + 2$ $4 = 2 \times 2$ $4 = 1 + 1 + 2$ $4 = 5 - 1$ $4 = 8 - 4$ $4 = 8 \div 2$ $4 = 16 \div 4$
Materials Required	<ol style="list-style-type: none">1. Board & Chalk2. Number cards3. Colored markers4. Chart paper5. Dice6. 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)
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 +, -, ×. 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. $2 * 3$)
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. $6 = 3 + 3$, 2×3 , $7 - 1$).
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 2×3 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

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