Session 3: Number Diagrams

Session Title	Number Diagrams
Objective	1. Understand different ways to represent numbers using diagrams and number sentences. 2. Explore addition, subtraction, and multiplication patterns for small numbers. 3. Strengthen visual learning and numerical flexibility using hands-on activities.
Concept	Number diagrams are visual representations t show the different ways to break down or buil number using operations like addition, subtraction, or multiplication. **Examples:** • 4 = 2 + 2 • 4 = 2 × 2 • 4 = 1 + 1 + 2 • 4 = 5 – 1 • 4 = 8 - 4 • 4 = 8 ÷ 2 • 4 = 16 ÷ 4
Materials Required	1. Board & Chalk 2. Number cards 3. Colored markers 4. Chart paper 5. Dice 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)

Methodology	Activity-based Learning: Drawing diagrams, u counters. Exploratory Learning: Discovering patterns in numbers through multiple operati
Session Duration	90 Minutes

Introduction Activity (15 minutes):

Number Diagram

Write a number (e.g., 4 or 5) in the center 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.

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 +, –, ×.
3. Explain which representation you find easiest and why.

Expected Learning Outcome:

Knowledge building:

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

Skill Building:

- Visual reasoning
- Creative problem-solving

- Mathematical communication

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