Session 32: Highest Common Factor (HCF)

Session Title	The Greatest Common
Objective	By the end of this session, students will be able to: 1. Understand the concept of HCF and its applications. 2. Develop logical reasoning and problem-solving skills. 3. Enhance collaboration and communication through activities. 4. Foster patience and perseverance in problem-solving.
Topics/Concept	Highest Common Factor (HCF) – Finding HCF using prime factorization and division method.
Material Required	1. Board 2. Chalk 3. Chart 4. Marker 5. pebbles/ beads 6. paper glass(50) 7. Box

Methodology	• Activity-based and experiential learning • SEL elements like teamwork, patience, and self-confidence • Real-life applications to make the concept meaningful
Session Plan	90 minutes

Intro Activity (45 minutes):

Working Model (25 minutes)

Materials Needed:

1. A table with numbers 1 to 50 written on it
2. Paper cups or glasses placed in front of each number
3. A box of beads (or small objects like pebbles)

Steps:

1. Introduce two numbers — for example, 10 and 15.
2. Give a student the box of beads.

First round (for 10):

- Ask the student to place one bead in every cup whose number is a factor of 10.
  (Factors of 10 = 1, 2, 5, 10 → place beads at: 1, 2, 5, 10)

Second round (for 15):

- Now ask the student to place another bead in every cup whose number is a factor of 15.
  (Factors of 15 = 1, 3, 5, 15 → place beads at: 1, 3, 5, 15)
- Now look at the cups that have two beads — these represent numbers that are common factors of both 10 and 15.

- The cups with two beads will be at: 1 and 5 (Common factors of 10 and 15 are 1 and 5)

Conclusion:

The highest number that has two beads (common factor) is 5.
So, the HCF of 10 and 15 = 5.

You can repeat this activity with other number pairs like:

- 12 and 18 (HCF = 6)
- 8 and 12 (HCF = 4)

Group Work (20 Minutes)

1. Divide students into small groups. Give each group 4 number cards. Example: 12, 18, 24, 30.
2. Ask them to find all factors of their numbers and write them down.

Answer:

- Factors of 12: 1, 2, 3, 4, 6, 12
- Factors of 18: 1, 2, 3, 6, 9, 18
- Factors of 24: 1, 2, 3, 4, 6, 8, 12, 24
- Factors of 30: 1, 2, 3, 5, 6, 10, 15, 30

1. Now, ask them to circle the common factors. Common factors: 1, 2, 3, 6
2. Guide them to find the highest common factor. HCF = 6

Discussion: What do you notice? Why is this factor important?
Answer: The HCF is the largest number that divides all given numbers without a remainder.

Main Activity (30 minutes):

Story: "The Royal Feast Challenge" (30 minutes)

King Aryan was preparing a grand feast for his kingdom. He wanted to serve food equally among the guests without anything left over.

The royal chef, Ravi, had collected:

- 48 loaves of bread
- 72 bowls of soup

The king asked, "How can we arrange these in equal groups so that each group gets the same amount of bread and soup?"

The villagers were excited to solve this puzzle. Can you help them?

Your Challenge:

1. Find the Highest Common Factor (HCF) of 48 and 72 to determine the number of groups.
2. Once you find the HCF, divide the food equally into that many groups.
3. How many loaves of bread and bowls of soup will each group get?

Think & Solve:

- Step 1: Find the factors of 48 and 72.
- Step 2: Identify the common factors.
- Step 3: Find the highest common factor (HCF).
- Step 4: Divide the food accordingly.

Review Questions (5 minutes):

1. What does HCF stand for?
2. How is HCF different from LCM?

Follow Up Task (10 minutes):

Home work

1. A school is making groups of students for a competition. There are 32 boys and 48 girls. Each group must have the same number of boys and girls.
2. What is the maximum number of groups that can be formed?
3. How many boys and girls will be in each group?

4. A fruit seller has 40 apples and 64 oranges. He wants to pack them into baskets, keeping the same number of apples and oranges in each basket.
5. How many apples and oranges will be in each basket?
6. What is the maximum number of baskets he can make?

Expected Learning Outcome:

Knowledge building:

- Definition of HCF
- Why HCF is important
- Different methods to find HCF

Skill Building:

- Logical thinking
- Problem solving skill

Revision #10
Created 1 May 2025 09:33:53 by iLab
Updated 8 July 2025 10:03:17 by Pooja