# Vision Empower & XRCVC Teacher Instruction KIT Fractional Numbers

Syllabus: Karnataka State Board Subject: Mathematics Grade: III Textbook Name: Mathematics Text cum Workbook Chapter Number & Name: 8, Fractional Numbers

# **1. OBJECTIVE**

# 1.1 OBJECTIVE AND PREREQUISITES **Objective**

Students will be able to:

- Identify half, one fourth and three-fourth of a whole number and relate to a real-life situation.
- Identify the symbolic form of half ( 1/2 ) quarter ( 1/4 ) three fourth ( 3/4 ) and explain their meanings

## **Prerequisite Concept**

• None

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Kindly Note: Activities marked with \* are mandatory

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# 2. LEARN

## 2.1 KEY POINTS

- 1. If we divide one object into two equal parts, then, each equal part is represented by (half)  $\frac{1}{2}$ .
- 2. When an object is divided into four equal parts, each equal part is called a quarter 1

and is represented by  $\overline{4}$  .

3. When an object is divided into four equal parts, three equal parts together form the

three-fourth  $\frac{3}{4}$ 

- 4. In the whole, there are four quarters.
- 5. If we keep one half on the other half, they coincide each other.
- 6. In two equal parts, each part is called as a half. If we join two halves, we get a whole.

# 2.2 LEARN MORE

# **3. ENGAGE**

3.1 INTEREST GENERATION ACTIVITY

DIVIDING INTO TWO EQUAL HALVES

Activity 1: Dividing into two equal halves \*

*Materials Required*: Roti, Biscuit, A4 sheet paper *Prerequisites:* None

Activity Flow

- 1. Divide the students into pairs.
- 2. Distribute 1 Roti, 1 Biscuit, 1 A4 sheet paper to each pair.
- 3. Ask them to divide the roti, A4 sheet and the biscuit equally among themselves.
- *4. Discuss the following questions:* 
  - a. How did you divide the roti, A4 sheet and the biscuit with your pair?
  - b. How many equal parts are there in roti?
    - Two equal parts. Each gets half roti.
    - Similarly, each gets a half biscuit and a half sheet of paper.
- 5. Discuss, in two equal parts, each part is called a half. If we join two halves, we get a whole.

*Note:To divide the A4 sheet - Ask them to fold the paper into two equal halves. The shorter sides of the paper should touch each other.* 

2. Check each pair and help them to share the given materials.

## **EQUAL PARTS**

## Activity 2: Equal parts\*

*Materials Required*: Paper strips and blunt scissors. *Prerequisites:* None

# Activity Flow

- 1. Take a strip of paper and ask, "How can we cut the strip so that we give half each to two children?"
- 2. Follow one suggestion, allowing one child to cut the strip, and then ask the others if this seems all right. How can it be checked?
- 3. When the children ask for the two strips to be put together, place them one underneath the other. If they do not match, ask the children if this would be fair. (Although this may not matter to the children at this stage, introduce an example involving food e.g. would it be fair to cut a cake into unequal parts?) Stick the two pieces together again with tape and encourage the children to suggest a way of getting it right first time i.e. by folding. When this solution is discovered use it to cut the strip in half and then repeat with several other strips to reinforce the idea.

# **TWO HALVES**

# Activity 3: Group Activity - Two halves.\*

*Materials Required*: Ten strips of paper of equal width but different length, cut into halves *Prerequisites:* None

Activity Flow

- 1. Divide the children into groups of 3.
- 2. Tell the children that ten strips of paper have been cut into halves but that they have all been mixed up by mistake.
- 3. The children have to sort out the strips into pairs of halves and lay them down as ten strips for the teacher to check. Example,



The above picture shows three different sizes of paper that has been cut into two halves.

## **3.2 CONCEPT INTRODUCTION ACTIVITIES**

#### PAPER FOLDING

## Activity 4: Paper folding/ Paper-cutting

*Materials Required*: 4 A4 sheet paper, blunt scissors. *Prerequisites:* None

# Activity Flow

- 1. Divide the students into groups of 4.
- 2. Distribute 4 sheets to each group.
- 3. Ask, in how many ways can you halve a piece of A4 paper? How do you know they are halves?
- 4. Ask them to fold the sheets into two equal halves in different ways using the given sheet.
- 5. Let them try to fold the sheets into two equal halves at least in any one of the following ways.
  - Hold the paper in their palms. The shorter sides (breadth) should touch their thumb. Ask them to fold the paper vertically, so that the edges of the shorter sides should touch each other.
  - Hold the paper in their palms. The longer sides (length) should touch their thumb. Ask them to fold the paper vertically, so that the edges of the longer sides should touch each other.

- Hold the paper in their palm. Ask them to give names to each corner of the paper in clockwise (left top corner A, right top corner B, right bottom corner c, left bottom corner- D. Ask them to fold the paper such that the corner B and D will touch/meet each other.)
- Hold the paper in their palm. Ask them to give names to each corner of the paper in clockwise ( left top corner A, right top corner B, right bottom corner c, left bottom corner- D. Ask them to fold the paper such that the corner A and C will touch/meet each other. )
- 6. After they have tried, explain the above folding methods to the students using a separate sheet for each method.

*Note: After each step, check them whether they have folded the paper correctly.* 

- 7. Let them explore how differently they have divided the paper into two equal halves.
- 8. Emphasize the meaning of half to the students.
- 9. Explain, the numerical form of half is  $\frac{1}{2}$ .

(In  $\frac{1}{2}$ , the top number is the numerator. It shows how many parts we have. The bottom number is the denominator and shows how many equal parts the item is divided into).

- If we divide one object into two equal parts, then, each equal part is represented by (half)  $\frac{1}{2}$ .
- $\circ$  One whole sheet is divided into 2 equal halves. One half is  $\frac{1}{2}$  .
- Two equal halves = 1 whole

$$\frac{1}{2} + \frac{1}{2} = 1$$

10. After folding each paper, help them to cut the paper by following the imprint of the folded line.

# QUARTER

# Activity 5: Quarter

Materials Required: Slice of bread Prerequisites: Concept of a half.

# Activity Flow

- 1. Divide the students into groups of 4.
- 2. Distribute a slice of bread to each group.
- 3. Ask them to share the bread equally among themselves.
- 4. Discuss how they shared the bread equally. Ask them to tell you the step by step process.

• Emphasize that they have shared a slice of bread among 4 people. The slice of bread is divided into 4 equal pieces. Each one gets 1 piece out of 4. I.e. each one gets a quarter of the bread.

1

- 5. Ask the difference between a half and a quarter.
  - In four equal parts, each part is called a quarter.
  - Half of a half is called a quarter.
- 6. Explain, the numerical form of a quarter is  $\overline{4}$ . A slice of bread is divided into four equal parts. The number of equal parts = 4. Each one gets 1 piece out of 4 so the fractional form is  $\frac{1}{4}$ .

$$\frac{1}{1} + \frac{1}{1} = \frac{1}{1}$$

- $\circ$  Two quarters make a half, 4 4 2
- In the whole, there are four quarters.
- $\circ \quad \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} = 1.$

#### **THREE FOURTH**

#### Activity 6: Three - fourth by folding a paper.

*Materials Required*: Foam sheet, 2 different types of bindi (round and long shape bindi) or leaves.

Prerequisites: Concept of a half and a quarter.

#### Activity Flow

- 1. Distribute a sheet of paper to everyone and 2 types of bindi to each group.
- 2. Divide the students into a group of 2. (Not a group activity, let them sit with a pair to clarify and help each other)
- 3. Ask them to fold the paper into four equal halves. Hold the paper, edges of the shorter sides should touch their thumb. Ask them to fold the paper vertically (edges of the shorter sides should touch each side). Unfold the paper, ask them to fold the paper horizontally (edges of the longer sides should touch each other).
- 4. Ask them to trace the imprint of the folded line. Ask them how many equal parts are there?
- 5. Tell them to fill one part with one type of bindi (round ones) and ask them the fractional part which is filled by round bindi.

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- $\circ$  Its fractional is quarter. It can be written as 4
- The total number of equal parts = 4.
- The number of parts filled by round bindi is 1.

- 1
- $\circ$  The fractional representation is  ${}^4$  .
- 6. Ask them to fill the remaining three parts with another type of bindi ( long one) and ask them the fractional parts which are filled by long bindi.
  - The fractional part is three-fourth.
    - 3
  - $\circ$  It can be written as 4 . Three parts are filled by long bindis out of 4 parts.
- 7. Discuss and explain, among four equal parts, three parts are called three-fourth. Three quarter together forms the three-fourth.

3.3 LET'S DISCUSS: RELATE TO DAILY LIFE\*

Ask the students to think of things which come in halves or quarters. For example,

- 1. half of a rupee = 50 paise.
- 2. Half a dozen eggs. ( 1 dozen = 12 eggs, half dozen = 6 eggs)
- 3. Half of an hour. ( 1 hour = 60 minutes, half an hour = 30 minutes)

# 4. EXERCISES & REINFORCEMENT

#### 4.1 PRACTICE EXERCISE

#### Activity 7: Practice problems

*Materials Required:* None *Prerequisites: Fractional representation of half and quarter* 

# Activity Flow

- 1. Give the children a selection of different sizes and types of fruit and vegetables, all cut into halves (carrots should be cut lengthways). Ask the children to match the 2 halves (reminding them to look at size as well)
- 2. Write the numerical form of the following :
  - 1) Half part
  - 2) Quarter part
  - 3) Three-fourth part
- 3. State the meaning of the given fractions as shown below :

Half Dividing an object into two equal parts and taking one part. = 2
Quarter

1

#### 3) Three-fourth

#### 4.2 IMPORTANT GUIDELINES\*

#### **Exercise Reading**

It is very important that the children practice their learnings as well as their Reading. Hence have the children read out the newly learned concepts from their textbooks or other available resources.

#### **Perform Textbook Activity**

It is good practice to have the children perform the textbook activities. Your textbook activities might not be accessible hence go through this resource to learn how to make textbook content accessible

#### **Provide Homework**

To evaluate their understanding and to help the student revise and implement the new learnt concept ensure to provide them with homework. Students should perform one or two of the questions mentioned above or from the textbook exercises with the teacher in Class and the remaining may be given for homework. Also, ensure that the student knows their special skills linked to independently using their accessible books as it will be critical to doing homework independently

#### **Reference:**

1. STEM LEARNING. Retrieved from https://www.stem.org.uk/system/files/elibrary-resources/legacy\_files\_migrated/2 6211-Topic%2036.pdf

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