

Stepping Stones for Fractions

Meaning of fractions –

- 1) Take paper rotis and do the following :
 - a. $6/2$ (Take 6 rotis and divide them equally among 2 persons)
 - b. $4/2$
 - c. $2/2$
 - d. $1/2$
 - e. $1/4$
 - f. $1/3$
 - g. $3/4$ (Take 3 rotis and divide them equally among 4 persons).
 - h. Compare $3/4$ and 3 pieces of $1/4$ (that is $1/4 + 1/4 + 1/4$). They are same.
 - i. Compare $2/3$ and 2 pieces of $1/3$ (that is $1/3 + 1/3$). They are same.
 - j. Compare $5/4$ and 5 pieces of $1/4$ (that is $1/4 + 1/4 + 1/4 + 1/4 + 1/4$) They are same.
 - k. Now read the following fractions :
 - $2/4$ is 2 pieces of $1/4$
 - $3/5$
 - $9/8$
 - $3/10$
 - $5/10$
 - $5/12$

- 2) Give old magazine papers of same size to all participants. Show one whole.
 - Make $1/2, 1/3, 1/4, 1/6, 1/8, 1/12, 1/9, 1/16$.
 - Arrange the above pieces from smallest piece to the largest piece.
 - Show $5/8$ that is, five pieces of $1/8$
 - Show $7/12$
 - Show $4/9$
 - Show $2/3$
 - Show $3/6$
 - Show $2/4$
 - Show $4/16$
 - Show $5/4$
 - Show $19/16$
 - Show $4/3$

Explain the following –

- First look at the denominator. Decide what type of pieces to take.
- Look at the numerator. Decide how many pieces to take.

Read the following fractions and tell how many pieces of which type you will take.

- $2/4$ is 2 pieces of $1/4$
- $3/5$
- $9/8$
- $3/10$
- $5/10$
- $5/12$

Fractions using Jodo blocks

- 1) Show a rod of 2 blocks. If this is my one whole (Full chocolate) give me half.
- 2) Show a rod of 4 blocks. If this is my one (Full chocolate) give me half.
- 3) Show a rod of 4 blocks. If this is my one (Full chikki) give me (One by four) $1/4$.
- 4) Show a rod of 4 blocks. If this is my one give me $1/3$. (*not possible*)
- 5) Give me the full chocolate of which I can make $1/3$ (*of 3 blocks or 6 blocks*)
- 6) Show a rod of 6 blocks. If this is my 1, give me $1/2, 1/3, 2/3, 3/3, 1/6, 2/6, 3/6, 4/6, 5/6, 6/6$
- 7) Which of these are equal? (*They are called as equivalent fractions*)
- 8) If this (show a rod of 4) is 1,
what is this (Show a rod of 2) ? ($1/2$)

What is this? (Show a single block) ($1/4$)

Join them (a rod of 2 blocks and a single block)

What is this? ($1/2 + 1/4$)

What is the answer? ($3/4$)

- 9) Show $1/2$ plus $1/3$ (*Selecting the correct rod as 1 is the most important step*).
Give me full chocolate of which I can make $1/2$ and $1/3$.
(*This is LCM*)
- 10) Make $1/6 + 1/3$
- 11) Make $1/2 + 1/5$
- 12) Make $1/2 + 1/3 + 1/5$
- 13) Make $3/4 - 1/4$
- 14) Make $1/2 - 1/4$
- 15) Make $3/4 - 1/2$

Adding and Subtracting Like fractions

- a. Can you count rotis if some are half, some are quarters, some are full?
No. You need pieces of the same type. Therefore while adding and subtracting fractions the denominator has to be the same.
- b. $1/4 + 2/4$ (one piece of a quarter roti and 2 more quarter rotis. 3 quarter rotis). We don't add denominators while adding like fractions.

- c. $\frac{3}{4} - \frac{1}{4}$ (three quarters. Take away one quarter. You are left with 2 quarters). We don't subtract denominators while subtracting like fractions.

On graph paper do the following

- d. Take a length of 12 cm. Mark all steps of $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{6}$, $\frac{1}{12}$, $\frac{1}{24}$
e. Also mark $\frac{5}{4}$, $\frac{8}{6}$ etc, mark $1\frac{1}{6}$, $1\frac{3}{4}$
f. Take a length of 12 cm and mark $\frac{2}{3}$, $\frac{5}{6}$.
g. Take a length of 10 cm and mark all steps of $\frac{1}{10}$ upto 2 whole.

On grid paper draw a 4x3 rectangle and colour the following fractions –

- h. 1 whole, $\frac{1}{2}$, $\frac{1}{3}$, $\frac{2}{3}$, $\frac{1}{4}$, $\frac{2}{4}$, $\frac{5}{4}$, $\frac{1}{6}$, $\frac{5}{6}$, $\frac{7}{6}$, $\frac{1}{12}$, $\frac{2}{12}$

Equivalent Fractions –

Take a piece of paper. Colour $\frac{1}{4}$
Fold it. And write the coloured fraction.
Repeat several times.
Find the rule.

$$\frac{1}{4} = \frac{2}{8} = \frac{4}{16} \dots$$

Multiply or divide numerator and denominator by the same number.

Adding and subtracting unlike fractions –

We can count only by same pieces. Therefore denominator has to be the same. Convert into equivalent fractions and find the answer.

$$\frac{2}{3} + \frac{1}{4}$$

$$\frac{4}{5} - \frac{1}{6}$$

Multiplying Fractions

- On grid notebook draw a rectangle of 4 x 3. What is the answer?
- Draw 1 x 1. What is the answer?
- Draw 2 x 1. What is the answer?
- Draw 2 x $\frac{1}{2}$. What is the answer?
- Draw 3 x $\frac{1}{3}$. What is the answer?
- Learn cancellation of same number from numerator and denominator.

- Take a piece of paper. Call its length as 1 and breadth as 1.
- Fold to get $\frac{1}{2} \times \frac{1}{3}$. What is the answer. Get $\frac{3}{4} \times \frac{2}{3}$. Fold to get the answer. Understand the rule for multiplication.

Dividing Fractions

- $6/2$ (If I have 6 rotis and I give 2 rotis to each child, how many children will get the rotis?)
- $6 / \frac{1}{2}$
- $4 / \frac{1}{4}$
- $\frac{1}{2} / \frac{1}{4}$
- Understand the rule.

Fraction and percentage

- Take a square of 10 cm x 10 cm . Colour $\frac{1}{2}$
 If I count it in pieces of $\frac{1}{10}$, it is $\frac{5}{10}$
 If I count it in pieces of $\frac{1}{100}$, it is $\frac{50}{100}$
 When the denominator is 100, it is called percentage. Therefore the coloured part is 50%
- If I have 100 rupees and if I spend 50 rupees in the market I have spent 50% (Link it to the picture above).
- If I have 20 rupees and I spend 50%. How much did I spend?

Use trirashik (cross multiplication)

Out of 100,		I spent 50
Out of 20	?	$20 \times 50 / 100$

SOLVE - fractions revision.