BISHOP SCOTT BOYS' SCHOOL

(Affiliated to CBSE, New Delhi) Affiliation No.: 330726, School Campus: Chainpur, Jaganpura, By-Pass, Patna 804453.
Phone Number: 7061717782, 9798903550. ,
Web: www.bishopscottboysschool.com Email: info@bishopscottboysschool.com

STUDY COURSE MATERIAL
MATHEMATICS
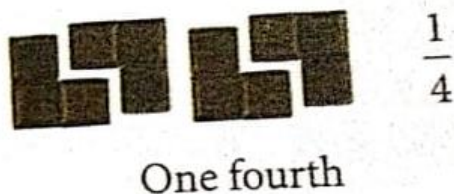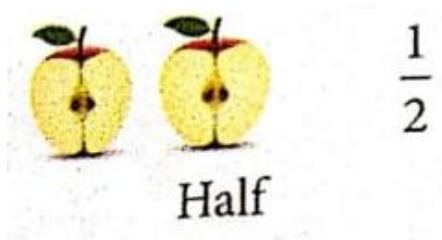### SESSION-2020-21
CLASS-IV

TOPIC: CHAPTER 6 – FRACTIONS

DAY-1

❖ **TEACHING MATERIAL**

FRACTION

FRACTION is one or more equal part of a whole object or a collection of objects. For example: ½ an apple, 1/3 of the chocolate, half of 4 balloons, etc.

Fraction of a whole

$\frac{1}{2}$

Half

$\frac{1}{3}$

One third

$\frac{1}{4}$

One fourth

A fraction has two parts:

a. The numerator,which is the number written on top and

b. The denominator, which is the number written below.

c. In the fraction 3/8 , 3 is the numerator and it explains how many parts have been considered. 8 is the denominator and it explains how many equal parts the whole has been divided into.
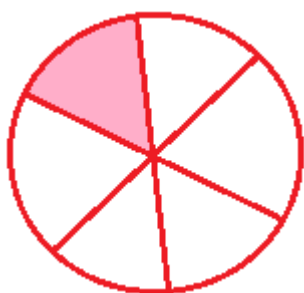
$$\frac{3}{8}$$

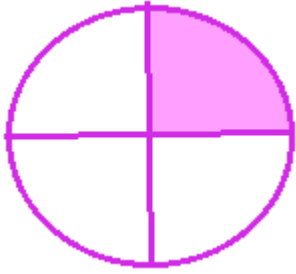Where , 3 is numerator and 8 is denominator.

Unit fractions

Fractions with a numerator 1 are called unit fractions. For example, 1/6 , 1/3 , 1/4 , and so on.

1/6

1/3

1/4

Like fractions

Fractions that have the same denominator are called like fractions. For example, 2/7 , 5/7 , 6/7 , etc
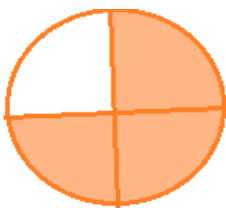

2/7

5/7
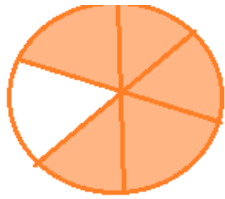

6/7

Unlike fractions

Fractions that have different denominators are called unlike fractions. For example, 3/4 , 5/6 ,6/7 , etc.

3/4

5/6

6/7

DAY-2
TEACHING MATERIAL

EQUIVALENT FRACIONS

Equivalent fractions are different fractions that have the same value. The equivalent fractions of a given fraction are those fractions, whose numerators and denominators are in the same ratio as that of the original fraction.

Example: 1/3, 2/6, 3/9, 4/12..are equivalent fractions.

Finding equivalent fractions of a given fraction −

Equivalent fraction of a given fraction is got by multiplying or dividing its numerator and denominator by the same whole number.

For example, if we multiply the numerator and denominator of 2/3 by 4 we get.

2/3 = 2×4 / 3×4 = 8/12 which is an equivalent fraction of 2/3.

Similarly, if we divide the numerator and denominator of 12/18 by 6 we get.

12/18 = 12÷6 / 18÷6 = 2/3. So 12/18 is an equivalent fraction of 2/3 as well.

Fill in the blank to make the fractions equivalent.

7/8 =? /40

Solution

Step 1:

To get an equivalent fraction, we multiply the numerator and the denominator by the same number

To go from 7/8 to ?/40, we multiply the denominator and numerator with 5 (8 x 5 =40) as follows.

7/8 = 7×5 / 8×5 = 35/40.

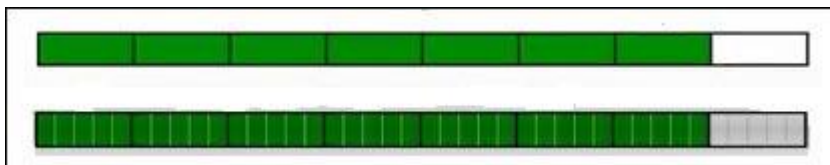Step 2:

So we have filled the blank with $7 \times 5 = 35$.

So from 7/8 = 35/40, 35 is the answer.

7/8 and 35/40 are equivalent fractions.

Step 3:

We can check the answers with the pictures below:-

Below 7/8 parts are shaded. Splitting each part into 5 equal parts, we see that 35/40 of the smaller parts are shaded.

FRACTION IN LOWEST/SIMPLEST FORM

A fraction is said to be in simplest form if the highest common factor(HCF) of its numerator and denominator is 1. A given fraction may be or may not be in the simplest form.

To simplify a fraction or to reduce it to its simplest form, we find the highest common factor HCF of both its numerator and denominator. The fraction is reduced to its simplest form by dividing its numerator and denominator by HCF found.

Write 5/10 in the simplest form.

Solution

Step 1:

We find the greatest number that divides both 5 and 10 exactly is 5. We use it to simplify the fraction as shown below.
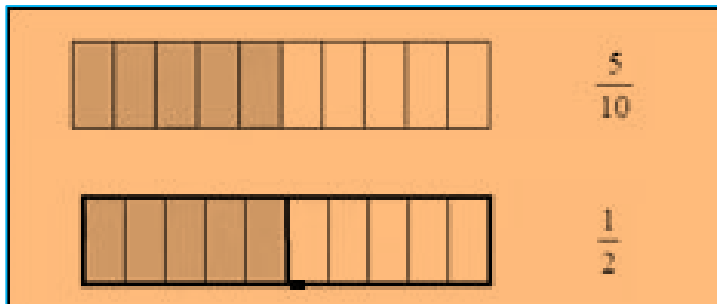
5/10 = 5÷5 / 10÷5= 1/2

Step 2:

The fraction 1/2 is in simplest from. The answer is 1/2.

Step 3:

Below 5 out of 10 bars are shaded.

Step 4:

We can make the bars into two equal parts. We see that 1 of these 2 parts is shaded. Therefore 5/10 = 1/2

VIDEO LINK:

https://www.youtube.com/watch?v=J5HVqrdIwSc

https://www.youtube.com/watch?v=TTm6VOYYv_I

EXERCISE

1. Find two equivalent fraction of :
   a. 2/3
   b. 4/4
   c. 1/3
   d. 5/6
   e. 4/7
2. Reduce the following fraction to their lowest term:
   a. 9/21
   b. 8/36
   c. 12/42

DAY-3

TEACHING MATERIAL

COMPARISON OF LIKE FRACTIONS

They are the group of two or more fractions that have exactly the same denominator. Or we can say that the fractions which have the same numbers at the bottom or in the denominators are called like fractions. For example, 1/7, 2/7, 5/7, 6/7 all like fractions, whose denominators equal to 7.
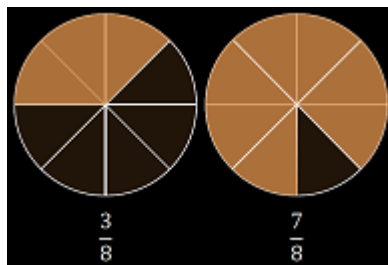
For example:- Arrange 2/9 , 5/9 , 4/9 , 1/9 , 6/9 in ascending and descending order.

Solution :- All these fractions are like fractions. We can arrange the fractions in

ascending order or descending order by comparing their numerators.
 As 1 < 2 < 4 < 5 < 6 , are the fractions in ascending order: 1/9 , 2/9 , 4/9 , 5/9 , 6/9.
As 6 > 5 > 4 > 2 > 1 are the fractions in descending order : 6/9 , 5/9 , 4/9 , 2/9 , 1/9.

Note:- The fraction which has the greater numerator in like fractions is greater. The fractions which has the smaller numerator in like fractions is smaller.

COMPARISON OF UNLIKE FRACTIONS
For example: Compare 2/5 and 1/2
Solution:- Two unlike fractions can be compared by making their denominators the same. We change them to like fractions.

2/5 = 2x2 / 5x2 = 4/10

COMPARISON OF UNLIKE FRACTIONS WITH SAME NUMERATOR
- When the numerators are the same, the fraction with the greater denominator is same.
- When the numerators are the same, the fraction with the smaller denominator is greater.

For example: Which is smaller : 4/12 or 4/14 ?
Solution:- When we comapre two fractions with the same numerator, the larger the denominator, the smaller is the fraction.
As , 12 < 14
4 / 12 > 4 / 14

EXERCISE

1. Compare the unlike fractions by changing to like fractions:

   a) 2/3 and 3/4

   b) 5/6 and 3/5

   c) 2/7 and 3/5

   d) 4/5 and 5/8

VIDEO LINK:-

https://www.youtube.com/watch?v=p2wUa_j7dEM

DAY-4

TYPES OF FRACTIONS

There are majorly three types of fractions, they are:

- Proper Fraction
- Improper Fraction
- Mixed Fraction

Proper and Improper Fractions

Similar to like and unlike fractions, we have another type of fractions, which are known as proper and improper fractions.

- A **proper fraction** is a fraction that has a value less than 1. Or we can say, when the value of the numerator is less than the denominator, then such fractions are called proper fractions. For example, 1/2, 1/3, 4/5, 6/7, 8/9, etc.
- An **improper fraction** is a fraction whose value is more than 1. When the value of the numerator is greater than the value of denominator, then the fraction is known as improper fractions. For example, 3/2, 5/4. 4/3. 8/3, etc.
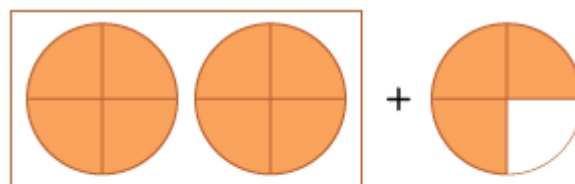
Mixed Fraction

When we combine a whole number and a fraction, to represent a mixed

number, then it is called a [mixed fraction]. For example: $4\frac{2}{3}, 2\frac{2}{5}, 1\frac{1}{3}$

Conversion of fractions

A mixed fraction can be converted into an improper fraction and vice versa.

A mixed fraction can be converted into an improper fraction in one of the following ways,

a) Let us consider the mixed fraction $2\frac{3}{4}.$ This can be written as 2+3/4. Now representing this visually, we get

$$\Rightarrow \frac{8}{4} + \frac{3}{4} = \frac{11}{4}$$

b) This can also be done using the cross-multiplication method (also called as the LCM method.)

$$2\frac{3}{4} = 2 + \frac{3}{4} = \frac{(4 \times 2) + 3}{4} = \frac{8 + 3}{4} = \frac{11}{4}$$

An improper fraction can be converted into a mixed fraction in one of the following ways,

a) Let's consider the fraction 17/8. It can be represented visually as given,

To convert an improper fraction into mixed fraction, divide the numerator by the denominator.

So , we divide 17 by 8

$$8 \overline{\smash{\big)}\, 17} \, \big(\, 2$$

16
_____
0 1

Hence, quotient $+ \dfrac{\text{Remainder}}{\text{Divisor}}$

$= \quad 2\dfrac{1}{8}$

EXERCISE

1. Convert 6/5 which is an improper fraction into a mixed fraction.

Addition and Subtraction of Fractions

Like Fractions

Suppose we are asked to add 1/7 and 2/7. One way to do this is to represent them both visually.

Let us represent these two fractions on the same strip (11 unit long).

Notice that a total of 3 parts (of 7 parts) of the strip are shaded.
Which means that 1/7+2/7=3/7

Let us use a strip to subtract 7/8 and 5/8. We first represent the larger of the two fractions on the strip (in this case 7/8). We next cross out the smaller fraction on the strip (in this case 5/8). We then count the number of parts of the shaded region that remain to get to the answer.

Since a total of 2 parts of the shaded region remain,

7/8−5/8=2/8

Unlike Fractions

When you are given two mixed fractions, you just go ahead and add/subtract them as you would two proper fractions. You take the LCM of the two denominators, and make that LCM the denominator of the solution, and multiply the denominators accordingly.

Example: 2 / 5 + 3 /7 =?

Solution :- 2 / 5 = 2x7 / 5x7 = 14 / 35

              3 / 7 = 3x5 / 7x5 = 15 / 35

$$14 / 35 + 15 / 35 = 29 / 35$$

Word problem

Example: Bimola read one fourth of a book which has 320 pages. How many pages has she finished reading?

Solution: Bimola has read one fourth of the book which means she has read one part out of four equal parts of the book.

i.e., 1/4 of 320 pages = divide 320 into four equal parts = $320 \div 4 = 80$ pages. Thus, Bimola has finished reading 80 pages of the book.

EXERCISE

1. Add the following:-
   a. 2/3 + 3/4
   b. 4/5 + 5/6

2. Subtract the following:-
   a. 7/10 – 3/10
   b. 9/11 – 6/11

3. Two thirds of a total of 75 birds flew away. How many birds are left?

❖ **VIDEO-LINKS**

Link -1 https://www.youtube.com/watch?v=aJB1N9RAFRs

Link-2 https://www.youtube.com/watch?v=L8bY9O0-j_4

❖ **PPT LINKS**

Link -1 https://www.youtube.com/watch?v=Ad0GRSYK9Mo

Link -2   https://www.youtube.com/watch?v=zQuUNE50JnM

Link -3   https://www.youtube.com/watch?v=9hZkk73nJ_Y