Fractions - An Introduction

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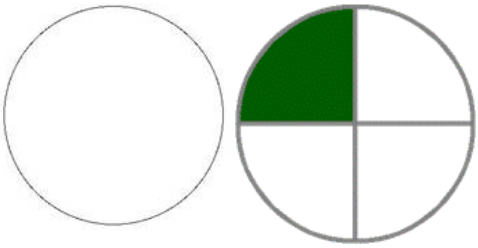
What is a Fraction?

We define fraction as a part of a whole number or fractions are for counting part of something. For example, we have a pizza which is to be shared among 4 friends so what is the share for each friend?

Below figures represent pizza and the share for one person respectively.



Types of fractions

- Proper fractions
- Improper fractions
- Mixed fractions

Proper Fraction – A fraction, whose numerator is less than the denominator is called Proper Fraction.
For example – 7/9, 3/11
Improper Fraction – A fraction whose numerator is greater than the denominator is called Improper Fraction.
For example – 17/5, 47/31
Mixed Fraction - A combination of a whole number and a proper fraction is called a Mixed Fraction.
For example – 2 3/5, 7 4/15

Conversion between Improper and Mixed fractions

In order to convert a mixed fraction into an improper fraction, we may use the following formula:

Improper Fraction = (Whole Number X Denominator) + Numerator
Denominator

For example – 3 2/5 = 3 X 5 +2 = 15 +2 = 17
5 5 5

Now, to express an improper fraction as a mixed fraction, we first divide the numerator by denominator and calculate the quotient and remainder and then we write the mixed fraction as

Remainder
Quotient
Denominator

For example – 19 = 4 ¾ [Quotient = 4, Remainder = 3]
4

Fractions – Standard Form

Types of fractions used in reducing fractions to their lowest or standard form

Equivalent Fractions – A given fraction and various fractions obtained by multiplying (or dividing) its numerator and denominator by the same non – zero number, are called Equivalent fractions.

For example – 3 X 2 = 6, 3 X 3 = 9, 3 X 4 = 12
4 X 2 8 4 X 3 12 4 X 4 16

Like Fractions – Fractions having the same denominators are called like fractions.

For example – 2, 7
15 15

Unlike Fractions – Fractions with different denominators are calledunlike fractions

For example – 2, 7
13 24

How to write fraction in its standard form

Fraction In Lowest Terms – A fraction is in its lowest terms if its numerator and denominator have no common factor other than 1.

For example - Reduce 144
180
First we find the HCF of 144 and 180 by factorization method.
The factors of 144 are: 1,2,3,4,6,8,9,12,16,18,24,36,48,72and 144
The factors of 180 are: 1,2,3,4,5,6,10,12,15,18,30,36,45,60,90 and 180
The common factors of 144 and 180 are: 1, 2, 3,4,6,12,18 and 36
So, HCF of 144 and 180 is 36.
Dividing numerator and denominator by the HCF of 144 and 180 i.e., 36
Now, 144 = 144 ÷ 36 = 4
180 180 ÷ 36 5

Comparing Fractions

Comparing Fractions – In order to compare fractions, we may use the following steps:

- Find the LCM of the denominators of the given fractions.
- Convert each fraction to its equivalent fraction with denominator equal to the LCM obtained in step 1.
- Arrange the fractions in ascending or descending order by arranging numerators in ascending or descending order.

For example, which is larger ¾ or 5/12?
Let us first find the LCM of 4 and 12.
We have,
2 4 12
2 2 6
3 1 3
1 1

LCM of 4 and 12 is 2 X 2 X 3= 12

Now we convert the given fractions to equivalent fractions with denominator 12.
3 = 3 X 3 = 9
4 4 X 3 12
We know that 9 > 5
9 > 5 3 > 5
12 12 4 12

Conversion of unlike fractions to like fractions

To convert unlike fractions to like fractions we follow the following steps:

- Find the LCM of the denominators of the given fractions.
- Convert each of the given fractions into an equivalent fraction having denominator equal to the LCM obtained in previous step.

For example – Convert the unlike fractions 7/6, 5/9 and 5/12 into like fractions.
We have, LCM (6, 9, 12) = (3 X 2 X 3 X 2) = 36
Now, 7 = 7 X 6 = 42 ; 5 = 5 X 4 = 20 ; 5 = 5 X 3 = 15
6 6 X 6 36 9 9 x 4 36 12 12 X 3 36
Clearly, 42/36, 20/36 and 15/36 are like fractions.

Now try it yourself! Should you still need any help,click here to schedule live online session with e Tutor!

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Reference Links:

- http://en.wikipedia.org/wiki/Fraction_(mathematics)
- http://www.thefreedictionary.com/proper+fraction
- http://wiki.answers.com/Q/What_is_an_improper_fraction
- http://en.wikipedia.org/wiki/Fraction_(mathematics)#Mixed_numbers
- http://www.aaaknow.com/fra42ax2.htm
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