

Introduction to Fractions

Fraction

Fraction – a number that represents a part of a whole. There are two parts in a fraction, a numerator and a denominator.

Examples

$$\frac{3}{4}, \frac{7}{8}, \frac{4}{5}$$

Note: The number on top is the numerator and the number at the bottom is the denominator.

Proper fraction

Proper fraction – a fraction where the numerator is smaller than the denominator will result in a value less than 1

Examples

$$\frac{1}{3}, \frac{1}{4}$$

Improper fraction

Improper fraction – Numerator equal to or greater than the denominator will result in a value equal to or greater than 1

Examples

$$\frac{21}{12}, \frac{15}{2}$$

Mixed number

A mixed number is a combination of a whole number and a proper fraction.

Examples

$$7\frac{2}{3}, 15\frac{3}{4}$$

Conversion of a mixed number to an improper fraction

Consider the mixed number, $7\frac{2}{3}$. First multiply the denominator, 3 by the whole number, 7. Then add the numerator 2 and place your answer over the denominator. This gives you $\frac{23}{3}$.

Example

$$1\frac{3}{4} = \frac{1 \times 4 + 3}{4} = \frac{7}{4}$$

Conversion of an improper fraction to a mixed number

Consider the improper fraction, $\frac{17}{5}$. First divide the numerator, 17 by the denominator, 5. The closest whole number to 17 that is divisible by 5 is 15. Dividing 15 by 5 gives you 3. Write 3 down as the whole number part of the mixed number that you need. Then subtract 15 from 17 which gives you 2. Write 2 as the numerator and 5 as the denominator in the fractional part of the mixed number. This gives you $3\frac{2}{5}$

Example

$$\frac{22}{3} = 7\frac{1}{3} \quad 22 \div 3 = 7 \text{ (remainder 1)}$$

Prime numbers

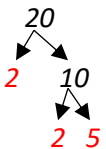
A Prime number is a whole number that is evenly divisible only by itself and 1

Examples

2, 3, 5, 7, 11, 13, 17, 19, 23, 29

Prime Factorization of a number

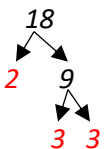
Consider finding the prime factors of 20. First divide 20 by the smallest prime number, 2. This gives you 10. Then divide 10 by 2 again. This gives you 5. Note, the factors 2 and 5 are prime factors. This process can be show using a diagram that forms the shape of tree branches



Prime factors are in red

$$20 = 2 \times 2 \times 5$$

Example



Prime factors are in red

$$18 = 2 \times 3 \times 3$$

Reducing fractions to the simplest form

A fraction can be reduced to its simplest form if you can divide the numerator and denominator by a common factor.

Example

$$\frac{25}{45} = \frac{25 \div 5}{45 \div 5} = \frac{5}{9}$$