

HCF and LCM

The highest common factor (HCF) of the algebraic expression is the largest number that divides evenly into both numbers. It can be said as largest of all common factors.

For example, HCF of $6x^3y^2$ and $10x^5y^4$ is $2x^3y^2$ since

HCF of 6 and 10 is 2

HCF of x^3 and x^5 is x^3

and HCF of y^2 and y^4 is y^2

To find the HCF of compound expressions, first of all, resolve each expression into factors and then find HCF.

Example:

Find the HCF of $3x^2 - 6x$ and $x^2 + x - 6$

Solution:

1st expression = $3x^2 - 6x$

= $3x(x - 2)$

2nd expression = $x^2 + x - 6$

= $x^2 + 3x - 2x - 6$

= $x(x + 3) - 2(x + 3)$

= $(x + 3)(x - 2)$

$\therefore = x - 2$

Lowest Common Multiple (LCM)

Multiples of 3:

0, 3, 6, 9, 12, 15, 18, 21, 24 ...

Multiples of 4:

0, 4, 8, 12, 16, 20, 24, 28 ...

The LCM of 3 and 4 is 12.

The lowest common multiple(LCM) is found by multiplying all the factors which appear on either list. LCM of any number is the smallest whole number which is multiple of both.

For example, LCM of $6x^3y^2$ and $10x^5y^4$ is $30x^5y^4$ since

LCM of 6 and 10 is 30, LCM of x^3 and x^5 and LCM of y^2 and y^4 is y^4 .

To find the LCM of compound expressions, proceed as in the case of HCF and then find LCM.

Example

Find the LCM of $3x^2 - 6x$

1st expression = $3x^2 - 6x$

= $3x(x - 2)$

2nd expression = $x^2 + x - 6$

= $x^2 + 3x - 2x - 6$

= $x(x + 3) - 2(x + 3)$

= $(x + 3)(x - 2)$

LCM = $3x(x - 2)(x + 3)$