Unit VI : Mathematical Library Methods

→ In-built methods
→ Mathematical functions are included in a class called 'Math' under 'Java.lang' package.

Math.min()

It returns the minimum of two numbers.

Eg:- double m = Math.min (-4.5, -5.4) Output -5.4

Math.max()

It returns the greatest value of two given arguments.

Eg:- double m = Math.max (9.2, 9.45) Output -9.45

Math.pow()

This method is used to find the power raised to a given base value.

Eg:- double m = Math.pow (2.0, 4.0); Output -16.0

Math.sqrt()

It is used to find the square root of a positive number

Eg:- double m = Math.sqrt (7.29) Output -2.7

Math.cbrt()

It is used to find the cube of a positive or a negative number

Eg:- double m = Math.cbrt (29.791) Output - 3.1

Math.log()

The math.log() function is used to find the natural logarithmic value of a given argument.

Eg:- double m = Math.log (6.25); Output - 12.45

Math.abs()

It always returns the absolute value of an argument (magnitude of the number without its sign i.e a positive value)

Eg:- double m = Math.abs (-12.45); Output - 12.45

Math.round ()

This method returns the value of a number rounded to its nearest integer. If the fractional part is less than 0.5 then it returns the same integer value, otherwise it returns the next higher integer.

Eg:- For positive numbers:

eg. double m = Math.round(8.5);

Output : 9

For negative numbers

eg double m = Math.round(-8.5)

Output : -8

Math.rint ()

This function returns the nearest integer of a given fractional number.

Eg:- For positive numbers

double m = Math.rint(8.5);

Output : 8.0

For negative numbers

double m = Math.rint(-9.5)

Output : -10.0

Math.ceil ()

It returns the next higher integer number that is greater than or equal to the argument.

Eg:- (i) double m = Math.ceil(8.5)

Output : 9.0

(ii) double m = Math.ceil(-8.5)

Output : -8.0

Math.floor()

It returns the lower integer number that is less than or equal to the argument.

Eg:- (i) double m = Math.floor (8.912)

Output : 8.0

(ii) double m = Math.floor (-8.912)

Output : -9.0

Math.exp()

It results in the exponential value of an argument x (i.e e^x). It returns a double type value.

Eg:- double m = Math.exp (6.25);

Output : 518.0128

Math.random()

It returns a random number between 0 and 1 in a double datatype value.

Eg:- double d = Math.random();

It will return any random value between 0 and 1

Trigonometrical functions

There are some trigonometrical functions which are frequently used in mathematics to find the sine, cosine, and tangent value respectively of a given angle in radians. Angles are passed as a argument to the function. Some of these functions are.

(i) Math.sin() (ii) Math.cos() (iii) Math.tan()

Math Function	**Return type**
Math.min()	Int/long/double, depending upon type of arguments
Math.max()	Int/long/double, depending upon type of arguments
Math.pow()	double
Math.sqrt()	double
Math.cbrt()	double
Math.log()	double
Math.abs()	Int/long/double, depending upon type of arguments
Math.round()	Long/int
Math.rint()	double
Math.ceil()	double
Math.floor()	double
Math.exp()	double