

Java Math

- The Java Math class has many methods that allows you to perform mathematical tasks on numbers.

Math.max(x,y)

- The Math.max(x,y) method can be used to find the highest value of x and y :

```
public static void main(String[] args) {  
    System.out.println(Math.max(5,10));  
}  
  
//Output  
//10
```

Math.min(x,y)

- The Math.min(x,y) method can be used to find the lowest value of x and y :

Math.sqrt(x)

- The Math.sqrt(x) method returns the square root of x :

Math.abs(x)

- The Math.abs(x) method returns the absolute (positive) value of x :

Random Numbers

- Math.random() returns a random number between 0.0 (inclusive), and 1.0 (exclusive):
- To get more control over the random number, e.g. you only want a random number between 0 and 100, you can use the following formula:

```
int randomNum = (int) (Math.random() * 101); // 0 to 100
```

```

package javaapplication2;

public class JavaApplication2 {

    public static void main(String[] args) {

        int randomNum = (int) (Math.random() * 101); // 0 to 100
        System.out.println(randomNum);

    }

}

```

All Java Math Methods

Method	Description	Return Type
<u>abs(x)</u>	Returns the absolute value of x	double float int long
<u>acos(x)</u>	Returns the arccosine of x, in radians	double
<u>asin(x)</u>	Returns the arcsine of x, in radians	double
atan(x)	Returns the arctangent of x as a numeric value between - PI/2 and PI/2 radians	double
atan2(y,x)	Returns the angle theta from the conversion of rectangular coordinates (x, y) to polar coordinates (r, theta).	double
cbrt(x)	Returns the cube root of x	double
ceil(x)	Returns the value of x rounded up to its nearest integer	double
cos(x)	Returns the cosine of x (x is in radians)	double
cosh(x)	Returns the hyperbolic cosine of a double value	double
exp(x)	Returns the value of E ^x	double
expm1(x)	Returns e ^x -1	double

floor(x)	Returns the value of x rounded down to its nearest integer	double
getExponent(x)	Returns the unbiased exponent used in x	int
hypot(x, y)	Returns $\sqrt{x^2 + y^2}$ without intermediate overflow or underflow	double
IEEEremainder(x, y)	Computes the remainder operation on x and y as prescribed by the IEEE 754 standard	double
log(x)	Returns the natural logarithm (base E) of x	double
log10(x)	Returns the base 10 logarithm of x	double
log1p(x)	Returns the natural logarithm (base E) of the sum of x and 1	double
max(x, y)	Returns the number with the highest value	double float int long
min(x, y)	Returns the number with the lowest value	double float int long
nextAfter(x, y)	Returns the floating point number adjacent to x in the direction of y	double float
nextUp(x)	Returns the floating point value adjacent to x in the direction of positive infinity	double float
pow(x, y)	Returns the value of x to the power of y	double
random()	Returns a random number between 0 and 1	double
round(x)	Returns the value of x rounded to its nearest integer	int
rint()	Returns the double value that is closest to x and equal to a mathematical integer	double
signum(x)	Returns the sign of x	double
sin(x)	Returns the sine of x (x is in radians)	double
tan(x)	Returns the tangent of an angle	double

<code>tanh(x)</code>	Returns the hyperbolic tangent of a double value	double
<code>toDegrees(x)</code>	Converts an angle measured in radians to an approx. equivalent angle measured in degrees	double
<code>toRadians(x)</code>	Converts an angle measured in degrees to an approx. angle measured in radians	double
<code>ulp(x)</code>	Returns the size of the unit of least precision (ulp) of x	double float