**AP Computer Science - Math Methods**

There are a number of math methods available to us in Java. We have already used Math.PI, Math.pow and Math.random in previous chapters. Here's a list of many more:

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| **Math Method** | **Purpose** | **Example** |
| Math.toDegrees(double) | Converts radians to degrees | Math.toDegrees(Math.PI/2)  |
| Math.toRadians(double) | Converts degrees to radians | Math.toRadians(30) |
| Math.sin(double), Math.asin(double) | Returns sine of an angle in radians | Math.sin(0) |
| Math.cos(double), Math.acos(double) | Returns cosine of an angle in radians | Math.cos(Math.PI /2) |
| Math.tan(double), Math.atan(double) | Returns tangent of an angle in radians | Math.tan(Math.PI/6) |
| Math.exp(double x) | Returns ex  | Math.exp(1) |
| Math.pow(double a, doubleb) | Returns ab as a double | Math.pow(3, 2) = 8.0 |
| Math.sqrt(double x) | Returns square root of x | Math.sqrt(144) = 12.0 |
| Math.ceil(double a) | A is rounded up to its nearest integer | Math.ceil(2.1) = 3.0 |
| Math.floor (double b) | B is round down to its nearest integer | Math.floor(-7.8) = -8.0 |
| Math.rint (double z) | Z is rounded up or down to nearest integer. If it is equally far away, it rounds to the nearest even integer | Math.rint(2.5) = 2.0Math.rint(3.2) = 3.0Math.rint(-5.5) = -6.0 |
| Math.round(int x or double x) | Returns (int) Math.floor(x + 0.5) | Math.round(6.7) = 7 |
| Math.random() | Generates random double between 0 and 1 | Math.random() = 0.27893129 |
| \*Math.min( int a, int b) or double | Returns smaller of 2 numbers | Math.min(4, 9) = 4 |
| \*Math.max | Returns larger of 2 numbers | Math.max(1.2, -4.9) = 1.2 |
| \*Math.abs(double a)  | Returns absolute value of a | Math.abs(-54.3) = 54.3 |

\*These Math methods are overloaded, meaning the can accept variables of type int, long, double or float in their parameter list.