JavaScript Math Object Complete Guide

1. Rounding & Integer Functions:

Math.floor(x) Rounds down Math.floor(4.9) = 4

Math.ceil(x) Rounds up Math.ceil(4.1) = 5

Math.round(x) Rounds to nearest Math.round(4.5) = 5

Math.trunc(x) Removes decimal Math.trunc(4.9) = 4

2. Random Numbers:

Math.random() Random number between 0 and 1

Math.floor(Math.random() * 10) Random number 09

Math.floor(Math.random() * (max - min + 1)) + min Random number between min and max

3. Basic Math:

Math.max(a, b, ...) Largest value

Math.min(a, b, ...) Smallest value

Math.pow(x, y) x to the power y

Math.sqrt(x) Square root

Math.cbrt(x) Cube root

Math.abs(x) Absolute value

4. Trigonometry (radians):

Math.sin(x), Math.cos(x), Math.tan(x)

Math.asin(x), Math.acos(x), Math.atan(x)

Convert degrees to radians: degrees * (Math.PI / 180)

5. Constants:

Math.PI = 3.14159...

Math.E = 2.718...

Math.LN2 = 0.693...

Math.SQRT2 = 1.414...

6. Logarithmic & Exponential:

Math.log(x) Natural log (base e)

Math.log10(x) Log base 10

Math.exp(x) e^x

Math.expm1(x) e^x - 1

Math.log1p(x) log(1 + x)

7. Advanced Helpers:

Math.sign(x) Sign of number (+1, -1, 0)

Math.clz32(x) Count leading zeros (32-bit binary)

Math.fround(x) Round to nearest 32-bit float

Math.hypot(a,b) sqrt(a + b + ...)

Most Common in Practice:

Math.random()

Math.floor(), Math.round(), Math.ceil()

Math.max(), Math.min()

Math.sqrt(), Math.pow()

Math.abs()

Example: Dice Roll (16)

```
let dice = Math.floor(Math.random() * 6) + 1;

console.log(dice);
```