

Numerical Variable Types

Variable Type	Description	Minimum value	Maximum value	Best used for
int	Basic integer variable	-32768	+32767	Simple counting and integer calculations, especially when negative values are needed
long	Large integer variable	-2,147,483,648	+2,147,483,647	Counting when large positive and negative numbers are needed
unsigned int	Variable to store positive integer values, including zero	0	65535	Counting and computing when you are sure negative values will not be encountered, and when you need slightly larger values than will fit into an int.
unsigned long	Variable to store large positive integer values, including zero	0	4,294,967,295	Counting and computing when you are sure negative values will not be encountered, and when you need larger values than will fit into a long.
float	Variable to store fractional values stored with a mantissa and exponent, like scientific notation	+/- 1.80 x 10 ⁻³⁸ (close to zero) or -3.4 x 10 ⁺³⁸ (most negative)	3.4 x 10 ⁺³⁸ (largest positive value)	Engineering and scientific calculations involving any quantity that has fractional values
double	Same as float on Arduino UNO. For more advanced microcontroller boards, and in other programming systems, (MATLAB, C and Fortran) a double variable has much larger range and precision than a float variable.	+/- 2.20 x 10 ⁻³⁰⁸ (close to zero) or -1.8 x 10 ⁺³⁰⁸ (most negative)	1.8 x 10 ⁺³⁰⁸ (largest positive value)	Numerical computations requiring a large number of significant digits, i.e. high precision. The large magnitudes are usually not as important as the gain in precision over the float type.