Variables

 A **variable** is a named memory location which temporarily stores data that can change while the program is running.

 A **final** is a named memory location which temporarily stores data that remains the same throughout the execution of the program. It is a **constant**variable in the program.

 The **type** of a variable indicates what kind of value it will store.

 The name of a variable is known as its **identifier**.

 A variable is given a value through an **assignment statement**.

Java recognizes different data types of variables depending upon what kind of data they can contain. Java has eight built-in primitive data types designated by reserved words:

byte	**float**
short	**double**
int	**char**
long	**boolean**

Variables of different types occupy different amounts of memory space and are described as having different sizes.

Of the eight primitive data types in Java, the four most commonly used are:**double, int, boolean,** and **char** . When you learn about objects, you will discuss the differences between primitives and objects.

Variables Most Often Used

Data Type	Java Keyword	Kind of Value	Bytes of Memory	Range of Values
Character	**char**	1 character - Unicode	2	not applicable
Byte	**byte**	integer	1	-128 to127

Short integer	**short**	Integers	2	-32,768 to 32,767 (-2^{15} to 2^{15} - 1)
Integer	**int**	Integers	4	-2,147,483,648 to 2,147,483,647 (-2^{31} to 2^{31} - 1)
Long Integer	**long**	Integers	8	-9223372036854775808 to 9223372036854775807 (-2^{63} to 2^{63} - 1)
Float	**float**	Decimal values to 7 decimal digit precision	4	3.4e-38 to 3.4e38 positive and negative
Double	**double**	Decimal values to 15 decimal digit precision	8	1.7e-308 to 1.73e308 positive and negative
Boolean	**bool**	Boolean (Logical) values True or False	1	not applicable

Rules for assigning variables:

Assign **short**, **int** or **long** data types when you are sure a variable is a whole number (NO decimal points). Which type you choose depends upon the size of the numbers.

Assign **float** or **double** when decimals are needed. Which type you choose depends upon the size of the numbers.

Assign **char** if the variable will always contain only ONE character of data.

Fun Fact!

Minecraft was built in JAVA! In order to build each element in the game, developers used variables!