

# Java `printf()` Cheat Sheet

## 1. Format Specifier Structure

Part	Description	Example
%	Starts the specifier	%d
[flags]	Formatting options (padding, sign, etc.)	%05d
[width]	Minimum output width	%6d
[.precision]	Decimal places (float) / max chars (string)	%.2f
conversion	Type of data to print	%s

## 2. Conversion Characters

Conversion	Meaning	Example Output
%d	Decimal integer	123
%f	Floating point	123.456000
%s	String	Hello
%c	Character	A
%b	Boolean	true
%x	Hex integer (lowercase)	7b
%X	Hex integer (uppercase)	7B
%o	Octal integer	173
%e	Scientific notation (lowercase)	1.234560e+02
%E	Scientific notation (uppercase)	1.234560E+02
%%	Literal percent sign	%

## 3. Flags

Flag	Purpose	Example Specifier	Example Output
-	Left-align	%-6d	123
+	Always show sign	%+d	+123
0	Pad with zeros	%05d	00123
,	Add grouping separator	%,d	1,234
(	Negative in parentheses	%(d	(123)

## 4. Width & Precision

Usage	Effect	Example Specifier	Example Output
Width	Minimum total characters	%6d	123
Precision (float)	Decimal places	%.2f	3.14
Precision (string)	Max characters	%.3s	Hel

## 5. Examples

Code	Output
System.out.printf("%d", 123);	123
System.out.printf("%05d", 123);	00123
System.out.printf("%-5dEnd", 123);	123 End
System.out.printf("%.2f", 3.14159);	3.14
System.out.printf("%+d", 123);	+123
System.out.printf("%,d", 1000000);	1,000,000
System.out.printf("(%d", -123);	(123)
System.out.printf("%s", "Java");	Java
System.out.printf("%c", 65);	A
System.out.printf(")	