**Unit 1 Cheat Sheet**

**1.1**

**System.out.println**  - prints line and moves cursor to a new line after printing.

**System.out.print** - prints line and leaves cursor on the same line after printing.

\*printing outputs is a great way to check your code works

**Errors**

**Syntax error -** the complier doesn’t understand your code and the program wont r run, usually due to spelling errors or missing semicolons. An error error message will be displayed and the program wont run.

**Runtime error -** the program will stop midway and you will receive an error. Usually

caused by asking the computer to do something that is not allowed,

like dividing by zero.

**Logic error -** The program will run and no error message will be displayed,

however, the program doesn’t do what is intended.

**1.2**

**Variables**

**Declaring a variable:**

Type name = value;

**Changing a variable:**

Name = newvalue; (‘=’ is an assignment operator and not an equals sign)

**Primitive data types:**

**Integer –** whole numbers (int)

**Double –** Number with decimal places (double)

**Boolean –** True or False, 1 or 0 (boolean)

**reference data types:**

**String –** Text (String) (use “ “ around text to assign string variable)

**Final:**

Can use keyword **final** to create a variable that cannot be changed.

final double pi = 3.14; (pi cannot be changed later on in the code)

**1.3**

**Arithmetic operators**

**+ (Addition)**

**− (Subtraction)**

**\* (Multiplication)**

**/ (Division)**

**% (Remainder)**

**1.4**

**Compound assignment operators**

**+= (take original value of variable and add value to the right of the operator)**

int a = 5;

a += 5; //a will equal 10

**-+ (take original value of variable and subtract value to the right of the operator)**

int a = 5;

a -= 5; //a will equal 0

**\*= (take original value of variable and multiply by value to the right of the operator)**

int a = 5;

a \*= 5; //a will equal 25

**/= (take original value of variable and divide by value to the right of the operator)**

int a = 5;

a /= 5; //a will equal 1

**%= (take original value of variable and divide by value to the right of the operator to find the remainder)**

int a = 5;

a %= 5; //a will equal 0 since 5 divided by 5 is has no remainder

**++ (increment value of variable by 1)**

int a = 5;

a++; //a will equal 6

**-- (decrement value of variable by 1)**

int a = 5;

a--; //a will equal 4

**1.5**

**Casting:**

(convert one data type to another)

int to double:

double a = (double)(5); //value of a will be 5.0

double to int:

int b = (int)(5.2); //value of b will be 5

\*Values of type double can be rounded to the nearest integer by (int)(x + 0.5) or (int)(x – 0.5) for negative numbers

int values require 4 bytes of memory. Therefore the values will range between Integer.MIN\_VALUE to Integer.MAX\_ VALUE

max int = 2,147,483,647

min int = -2147483648

**key concepts and terms summary:**

<https://csawesome.runestone.academy/runestone/books/published/csawesome/Unit1-Getting-Started/topic-1-7-summary.html>