# teacher’s guide

# 3 – Primitive Data Types

**OBJECTIVES:** The student will write valid identifiers in Java.

The student will declare and initialize variables of each of the eight primitive data types in Java.

The student will declare variables using various data types.

The student will send numerical output using the System.out object.

The student will print the ASCII equivalent value for a character value.

The student will use an assignment statement to change the value of a variable.

The student will distinguish between a primitive variable and an object.

The student will write and solve mathematical expressions and use the expression to solve simple problems.

The student will use the assignment operators to write accumulation statements.

The student will use increment and decrement operators to add one to their variables.

**ACTIVITIES/TIME:** One week

**MATERIALS:** Student Lesson A3: *Primitive Data Types*

Handout A3.1, *Reserved Words in Java*

Handout A3.2, *ASCII Characters*

Lab Assignment A3.1, *Easter*

Lab Assignment A3.2, *Coins*

Worksheet A3.1, *DataTypes*

Worksheet A3.2, *Precedence and Assignment Operators*

Worksheet A3.3, *Math Operators*

Worksheet A3.4, *A1-A3 Vocabulary Review* *Crossword*

Teacher's Guide, Lesson A3: *Primitive Data Types*

Lab Assignment A3.1 - Answers, *Easter.java*

Lab Assignment A3.2 - Answers, *Coins.java*

Worksheet A3.1 - *Answer Sheet*

Worksheet A3.2 - *Answer Sheet*

Worksheet A3.3 - *Answer Sheet*

Worksheet A3.4 - *Answer Sheet*

Quiz A1 - A3

Quiz A1 - A3 – *Answer Sheet*

Extra Questions A1 – A3

Extra Questions A1 – A3 – *Answers*

**REFERENCES:** **LearnBinary.com**<http://www.learnbinary.com/home.htm>

A nice site for interactive, web-based instruction on binary numbers, binary ⬄ decimal, storing fractions, and 2’s Complement.

**INSTRUCTOR**

**NOTES:** All modern high-level languages have different categories for storing information. An integer presents different challenges in storage and usage than does a floating-point value. If you have time and are familiar with the material, a supplemental presentation on computer number systems would fit nicely with this lesson. A complete lesson on number systems is found in Lesson A21, *Number Systems*.

This lesson again provides an opportunity to stress the differences between a primitive data type and an object data type.

Students will print out numerical values but the formatting of such output will be covered in Lesson A7, *Simple IO*.

There are two labs in this lesson in the same format as previous lab assignments. It is sometimes useful to use one or two of the labs for the students who can move along at a faster pace. A lab can be saved for later to wrap around learning at a later date. The students will enjoy Lab Assignment A3.1, *Easter*, because they will like the algorithm and will get a feel for the usefulness of the modulus operator.

An extra credit assignment of putting together a presentation on other number systems is a great idea for students who are moving along at a faster pace. Using one of the other packages, like KarelJRobot or Alyce, is also a good project for these accelerated students.

Quiz A1 – A3 is designed to take approximately 20 minutes. You can add some questions from Extra Questions A1 – A3 or add Worksheet A3.4, *A1-A3* *Vocabulary Review Crossword* to make this into a longer quiz or an exam.

**WORKSHEET**

**NOTES:** Worksheets A3.1 - A3.3 give students practice with data types and math operators - what works and what doesn’t.

Worksheet A3.4, *A1-A3 Vocabulary Review Crossword* looks back over the vocabulary terms for Lessons A1 through A3 in a fun, crossword format.

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