Name: _____ Session: AM / PM
Circle one

Chapter 1 - Day 2

Programs, Java & OOP Concepts

PROGRAMS & ALGORITHMS

Term	Definition / memory cue
Algorithm	
Program	

Sequence: The payroll steps run in _____, from _____ to _____.

LANGUAGES & SOURCE CODE

Term	Definition / memory cue
Machine language	
Programming language	
Source code	

Remember: Java source code must be translated before the CPU can carry out its instructions.

JAVA BACKGROUND

1991: Oak began at Sun Microsystems. **1995:** Renamed Java.

Application = _____

LANGUAGE ELEMENTS

Element	Definition / memory cue
Key word	
Operator	
Punctuation	
Programmer-defined name (identifier)	
Syntax	

Reading & Running Java

```
1  public class Payroll
2  {
3      public static void main(String[] args)
4      {
5          int hours = 40;
6          double grossPay, payRate = 25.0;
7
8          grossPay = hours * payRate;
9          System.out.println("Your gross pay is $" + grossPay);
10     }
11 }
```

= ASSIGNMENT

Example code:

Meaning:

*** MULTIPLICATION**

Example code:

Meaning:

; PUNCTUATION

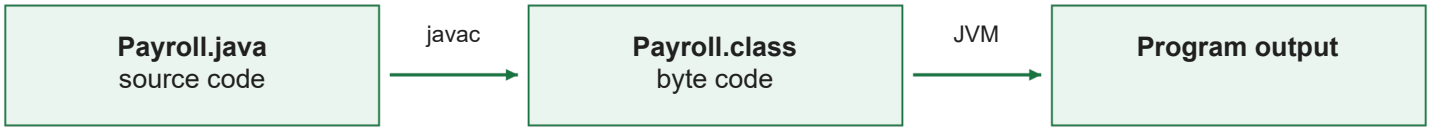
Example code:

Meaning:

Operand = _____

Variable = _____

COMPILER, BYTE CODE & THE JVM



Compiler: Software that _____ source code and translates it to a different form.

JVM: Software that _____ and _____ Java byte code.

Byte Code: The _____ stored in a compiled Java _____ file.

Portability: The same class file can run on different systems with a compatible _____.

COMMANDS TO KEEP FOR REFERENCE

javac Payroll.java	Compiles; creates Payroll.class
java Payroll	Runs; use the class name with no extension

CHAPTER 1 - DAY 2

JAVA DEVELOPMENT TOOLS

Planning, Tools & Errors

JDK: A collection of _____ used to develop _____ programs.

SDK: A collection of _____ used to develop software for a particular _____.

IDE: An application that combines an _____, _____, and _____ into one place.

THE PROGRAMMING PROCESS

Nine steps	Your notes / memory cues
1. Define what the program should do 2. Visualize the program running 3. Design a model, such as pseudocode 4. Check the model for logical errors 5. Enter the code and compile it 6. Fix compiler errors 7. Run with test data 8. Fix runtime errors 9. Validate the results	

Planning happens before coding: steps 1-4. Repeat 5-6 for compiler errors; return to editing, compiling, and testing when errors appear.
Software engineering = _____

PSEUDOCODE: BROAD & DETAILED

Broad plan	Detailed plan
Get payroll data. Calculate gross pay. Display gross pay.	Display a question about hours. Input _____. Display a question about the hourly rate. Input _____. Store hours times rate in _____. Display the value in _____.

Pseudocode is a planning tool. It does not need Java's exact punctuation rules.

THREE KINDS OF ERRORS

Type	What happens / an example to remember
Syntax error	
Logical error	
Runtime error	

CHAPTER 1 - DAY 2

TWO WAYS TO ORGANIZE A PROGRAM

Objects, Encapsulation & Data Hiding

Procedural programming	Object-oriented programming (OOP)
Data is separate from the procedures that use it.	Related data and behavior are bundled in objects.

Procedure = _____

INSIDE AN OBJECT

OBJECT

ATTRIBUTES

METHODS

Object: a software unit that brings related data and methods together.

Attribute = _____

Method = _____

An object does not have to represent a physical thing.

ENCAPSULATION & DATA HIDING

Term	Definition / memory cue
Encapsulation	
Data hiding	

Outside code → **Public methods** → **Hidden data**

Outside code works with hidden data through the object's _____.

MY REFERENCE REMINDERS

Compiler vs. JVM: _____

Key word vs. identifier: _____

A question or example to remember: _____