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1.01 Introduction to Algorithms, Programming, and Compilers

Define the following terms.

programming language A set of instructions to computer by a programmer	**Algorithm** The steps to solve a task
pseudocode Writing the algorithm of solution in human language	**Sequencing** Running the algorithm step by step
class A general place where code is written	**Method** Special instructions that you define
IDE A software application	**Compiler** The thing that converts programming language to binary code

1.02 Variables & Data Types

Define the following terms.

variable a thing that stores value	**primitive variable** A variable type that holds a numerical value
reference variable Other variable types other than primitive like String	**data type** Types of variables
`int` A data type that holds integer values	`double` a data type that holds values with decimal plates

`boolean`	`String`
a value type that holds true or false	A data type that holds texts or other

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declaring a variable	**initializing a variable**
Creating a variable	giving a value to variable

Declare the following variables. Make sure you use the correct type.

Declare a variable called `num` with the value 10. int num = 10;	Declare a variable called `pi` with the value 3.14159 double pi = 3.14159;
Declare a variable called `isRaining` with the value true boolean isRaining = true;	Declare a variable called `word` with the value Hello String word = "Hello";

1.03 Expressions and Output

Integer Division and Mod

1 / 2 = 0	4 / 2 = 2	13 / 4 = 3	3 / 4 = 0
1 % 2 = 1	4 % 2 = 0	13 % 4 = 1	3 % 4 = 3

How do you access the last digit of `num`? num % 10 ;	How do you remove the last digit of `num`? num / 10;

Solve these problems using P-MD%-AS.

8 - 18 / 6 * 4 -4	25 * 3 + 11 / 2 80
13 % 5 - 2 * 3 -3	20 / 3 * 6 % 7 1

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1.04 Assignment Statements and Input

Write code that does the following:

Imports the Scanner class.	import java.util.Scanner;
Creates a Scanner object.	Scanner scanner = new Scanner(System.in)
Gets an integer value and stores it in the variable num.	int num = scanner.nextInt();
Gets a decimal value and stores it in the variable num2.	double num2 = scanner.nextDouble();
Gets the next line of text and stores it in the variable line.	String num3 = scanner.nextLine();
Gets the next word of text and stores it in the variable word.	

1.05 Casting and Range of Variables

What is the result of the following expressions?

1 / 2 = 0	13 / 4 = 3	3 / 4 = 0	(int) 4.7 = 4

(double) 1 / 2 = 0.5	(double) 13 / 4 = 3.25	(double) 3 / 4 = 0.75	(int) 3.3 = 3

What line of code would round the number num to the nearest

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1.06 Compound Assignment Operators

Trace the values of the variables in the table below. **line of code value of `value`** `int value = 50;` `value += 10;` 60 `value -= 15;` 45 `value *= 2;` 90 `value /= 4;` 22 `value %= 5;` 2	**line of code value of `count` `int`** `count = 120;` `count += 35;` 155 `count -= 5;` 150 `count *= 3;` 450 `count /= 10;` 45 `count %= 8;` 5