Worksheet 1.3: Primitive Variables, Number Calculations

1. Which of the following is a legal variable name in Java?

ltest, value, initial_amount.

2. Given the following lines appear IN THIS ORDER in a java program

Code	Will it compile?	If no, why?
int x = 7;	**yes**	
int y = 8.2;	**no**	**The variable is definded as an int and given a double**
int z = 9.0;	**no**	**The variable is defined as an int and given a double**
int myNum = 0;	**yes**	
int 1stNum = 1;	**no**	**Variables cannot start with a number**
int FAVENUM = 18;	**yes**	
double a = 17;	**yes**	
double b = 18.5;	**yes**	
double b = -9.2;	**no**	**A variable cannot be redefined**
x = 29;	**yes**	
35 = x;	**no**	**A value cannot be assigned to a raw integer**
newNum = 12;	**yes**	
char one = 'g';	**yes**	
char two = '9';	**yes**	
char three = '%';	**yes**	
char four = 'abc';	**no**	**A char must be only on character**
int div = 10/myNum;	**no**	**The program cannot divide by 0**

3. What is the value of x after all the code is executed?

x = -10

4. What type of variable would you use to:

4.1. hold the number of students in a school?

Integer

4.2. hold the exact average number of students per class?

Double

4.3. hold a student's letter grade A, B, C? What if letter grade is A-,C+?

Character to hold A,B, or C. String to hold A- or C+.

5. Given the following code segment, show what prints out after each System.out.println:

```
int num1 = 3;

int num2 = num1;
```

num1 = 7 + 2;

System.out.println(num1); // 9

System.out.println(num2); // 3

num2 += 10;

System.out.println(num1); // 9

System.out.println(num2); // 13

6. What is stored in each variable after the following computations are done:

int var1 = 2 + 3 * 12 / 4 - 1 + 6; var1 = 16

int var2 = 13 - 3 * 6 + 10 / 2; var2 = 0

int var3 = (21-5) / 4 * 2; var3= 8

7. Write the code to declare three variables: an int named number, a double named amount and a char named c. Then separately initialize those variables with an appropriate value.

```
public class declareVariables
{
    public static void main(String args)
    {
        int number; // int named number
        double amount; // double named amount
        char c; // character named c
        number = 2; // initializes number
        amount = 3.5; // initializes amount
        char c = 'c' // initializes c
    }
}
```

8. Write the code to ask the user for their birth year. Then write the code that will calculate how old they are (or will be) this calendar year.

```java
// Imports the scanner library
import java.util.Scanner;

public class calculateYear
{
    public static void main(String[] args)
    {
        // Initializes the scanner
        Scanner scan = new Scanner(System.in);
        // Prompts client to enter their birthyear
        System.out.print("What is your birth year?\n=> ");
        // Initializes birthYear as the integer the client inputted
        int birthYear = scan.nextInt();
        int currentYear = 2021;
        // Calculates how old the client is
        int age = currentYear - birthYear;
    }
}
```

9. Write the code to ask the user for three test grades then use those to calculate the average of their tests.

```java
// Imports the scanner library
import java.util.Scanner;

public class testScores
{
    public static void main(String[] args)
    {
        // Opens a scanner
        Scanner scanDouble = new Scanner();
        // Prompts the user to enter their first test grade
        System.out.print("Enter a test grade\n=> ");
        // Logs user input as variable firstGrade
        double firstGrade = scanDouble.nextDouble();
        // Prompts the user to enter a second grade
        System.out.print("Enter a second grade\n=> ");
        // Logs user input as variable secondGrade
        double secondGrade = scanDouble.nextDouble();
        // Prompts the user to enter a third grade
        System.out.print("Enter a third grade\n=> ");
        // Logs user input as variable thirdGrade
        double thirdGrade = scanDouble.nextDouble();
        // Averages the grades together to produce an averageGrade variable
        double averageGrade = (firstGrade + secondGrade + thirdGrade) / 3;
    }
}
```