Data Types

> *This worksheet is designed to give you practice performing basic arithmetic conversions based on the syntax of the Java language. It contains a problems that range from basic arithmetic to more complex challenge problems. To check your answers, you can use tutorialspoint.com and replace the contents of the `System.out.println` statement with whatever you are trying to compute.*
> *n*

Types of Data

Characterize each of these values by what data types they could be

1. `false`
2. `'a'`
3. `"a"`
4. `53.2`
5. `448`

Initialization and Declarations

Determine whether or not each of these initializations is valid

1. `double ten10 = 10;`
2. `char temp = 'A';`
3. `char temp = "A";`
4. `int a = 25;`
5. `int b = a;`
6. `double ten = 15.0;`

7. `int temp = 102110921029109291029091;`
8. `int comparison = 24211.10201;`
9. `boolean compare = false;`
10. `boolean compare = 21;`

Operations

Evaluate each of these expressions based on operator precedence

1. `5 + 10 - (-10 % 2)`
2. `(109 - (101 % 11) * 54)`
3. `13 % 2 / (25 + 4)`
4. `10 + 15.0 / 24`
5. `(((1 * 2 + 3) * (4 + 5 * 6) + 7) * 8)`

Challenge Problems

*Give these a shot once you've done the other problems on the worksheet (Disclaimer: you **do not** have to know these problems for the AP exam, but they may help with strengthening your overall understanding)*

1. Determine whether or not the following statement represents a proper initialization for a `char` type: `char temp = 65;`. If you think the statement is valid, explain why, and if the statement won't work, explain why not.
2. Evaluate the sum `int temp = 'j' + 'a' + 'v' + 'a';`.
3. Suppose we are creating a program that is finding the average cost of oranges.
4. Evaluate the sum `int i = 10 + + 11 - - 12 + + 13 - - 14 + + 15;`
5. What is the difference between `System.out.println('H' + 'a' + 't' + 'c' + 'h' + 'e' + 'r');` and `System.out.println("H" + "a" + "t" + "c" + "h" + "e" + "r");`? Describe the difference between the *types* of the output, as well as the content of the output.