Kotlin Functions: Programming Worksheet

## Problem 1: Create and Run a Kotlin Program

Write a Kotlin program that prints your name and the current year.  
Hint: Use the main() function and string interpolation.

Solution:

## Problem 2: Command-Line Arguments

Write a program that takes two command-line arguments (your first and last name) and prints "Hello, [First] [Last]!"  
Test your program with and without arguments. Handle the case where arguments are missing.

Solution:

## Problem 3: If Expression Assignment

Write a function that takes an integer temperature and returns "Hot" if it’s above 30, "Cold" if below 10, and "Moderate" otherwise. Use an if expression to assign the result.

Solution:

## Problem 4: Unit Returning Function

Write a function called printDivider that prints a line of dashes (-----).  
Demonstrate calling this function and assign its result to a variable. Print the variable to show what value it holds.

Solution:

## Problem 5: Default and Required Parameters

Write a function greetUser that takes a name (required) and a greeting (default: "Hello").  
Call it with just the name, and then with both name and a custom greeting.

Solution:

## Problem 6: Named Arguments

Write a function formatMessage with parameters: message: String, prefix: String = ">>", suffix: String = "<<".  
Call it using named arguments to change only the suffix.

Solution:

## Problem 7: Single-Expression Function

Write a single-expression function cube that returns the cube of an integer.

Solution:

## Problem 8: Lambda and Higher-Order Function

Write a higher-order function applyOperation that takes an integer and a function (Int) -> Int, and returns the result of applying the function to the integer.  
Create a lambda that doubles a number, and use it with applyOperation.

Solution:

## Problem 9: List Filtering

Given a list of words, write code to filter and print only those that start with the letter 'a'.  
Repeat the filter using both the implicit it and an explicit parameter.

Solution:

## Problem 10: Eager vs Lazy Filtering

Create a list of numbers from 1 to 1000.  
a) Use an eager filter to get all even numbers and print the size of the resulting list.  
b) Use a sequence and a lazy filter to get all even numbers, then convert to a list and print the size.

Solution:

## Problem 11: List Transformations

Given a list of lists of integers, use flatten to create a single list.  
Then, use map to square each number in the flattened list.

Solution:

## Problem 12: Function Reference

Write a function reverseString(s: String): String.  
Pass it as a function reference to a higher-order function that takes a string and a function (String) -> String.

Solution: