**JavaScript Assignment 2 (Numbers, Math and String)**

Here's an assignment that covers Numbers, Math methods, Data type conversion, and Strings in JavaScript:

**Assignment: JavaScript Fundamentals**

**Part 1: Numbers and Math Methods**

1. **Basic Arithmetic Operations:**
   * Write a function that takes two numbers as input and returns their sum, difference, product, and quotient.
2. **Random Number Generator:**
   * Write a program that generates a random integer between 1 and 100 using JavaScript's Math.random() and Math.floor() methods.
3. **Rounding Numbers:**
   * Create a function that rounds a given floating-point number to two decimal places using the Math.round() method.
4. **Power and Square Root:**
   * Write a function that calculates the square root of a number and raises another number to a given power. Use Math.sqrt() and Math.pow() for these calculations.
5. **Trigonometry Functions:**
   * Write a program that calculates the sine, cosine, and tangent of an angle (in degrees). Convert the angle to radians using Math.PI and Math.radians() before performing the calculations.
6. **Min and Max:**
   * Write a function that takes an array of numbers and returns the minimum and maximum values using Math.min() and Math.max().

**Part 2: Data Type Conversion**

1. **String to Number Conversion:**
   * Write a program that takes a string representing a number and converts it to an integer and a floating-point number using parseInt() and parseFloat(). Handle cases where the string is not a valid number.
2. **Number to String Conversion:**
   * Create a function that converts a number to a string and checks if the result is a valid string data type.
3. **Boolean Conversion:**
   * Write a function that takes a string input and converts it to a boolean value. Handle cases where the string is "true", "false", or any other value.
4. **Implicit vs. Explicit Conversion:**
   * Provide examples of implicit type coercion in JavaScript and compare them with explicit type conversion using functions like Number(), String(), and Boolean().

**Part 3: Strings**

1. **String Manipulation:**
   * Write a function that takes a string and returns it with the first letter of each word capitalized.
2. **String Length:**
   * Create a function that takes a string and returns its length without using the .length property. (Hint: Use a loop).
3. **Substring Extraction:**
   * Write a program that extracts a substring from a given string. Demonstrate the use of substring(), slice(), and substr() methods.
4. **String Reversal:**
   * Write a function that reverses a given string without using built-in methods like reverse().
5. **Palindrome Check:**
   * Write a function that checks if a given string is a palindrome (reads the same backward as forward).
6. **Character Counting:**
   * Create a function that counts the number of vowels and consonants in a given string. Consider both uppercase and lowercase characters.
7. **String Replace:**
   * Write a program that replaces all occurrences of a specific substring in a string with another substring. Demonstrate the use of replace() and replaceAll() methods.

**Part 4: Combined Tasks**

1. **Number to String and Back:**
   * Write a program that takes a number, converts it to a string, concatenates some text to it, and then converts it back to a number. Verify that the final result is a number.
2. **String to Number with Validation:**
   * Create a function that takes a user input as a string, validates if it's a number, and then converts it to a number if valid. If not, return an error message.
3. **Math and Strings:**
   * Write a program that takes a string containing a mathematical expression (e.g., "3 + 5 \* 2") and evaluates it to return the correct result. (Hint: Consider using eval(), but be cautious about its use).

This assignment should provide you with plenty of practice on these key JavaScript topics.