

| Test Case | Input | Expected Output | Observation |
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| 1. Addition | Operation: 1 Num1: 15 Num2: 25 | Result: $15.0 + 25.0 = 40.00$ | The result displayed was 40.00, as expected. |
| 2. Subtraction | Operation: 2 Num1: 50 Num2: 20 | Result: $50.0 - 20.0 = 30.00$ | The result displayed was 30.00, as expected. |
| 3. Multiplication | Operation: 3 Num1: 7 Num2: 8 | Result: $7.0 * 8.0 = 56.00$ | The result displayed was 56.00, as expected. |
| 4. Division | Operation: 4 Num1: 9 Num2: 3 | Result: $9.0 / 3.0 = 3.00$ | The result displayed was 3.00, as expected. |
| 5. Division by Zero | Operation: 4 Num1: 10 Num2: 0 | Output: Cannot divide by zero. | The program correctly showed "Cannot divide by zero." |
| 6. Invalid Operation Input | Operation: 7 | Output: Invalid option. Try again. | The program prompted with "Invalid option." |
| 7. Invalid Number Input | Operation: 1 Num1: a Num2: 5 | Output: Please enter valid numbers. | The program showed "Please enter valid numbers." |
| 8. Operation After Exiting | Operation: 5 Operation: 1 Num1: 10 Num2: 5 | Output: Exiting the calculator. Goodbye! | The program exited and did not perform further calculations. |
| 9. Edge Case for Large Numbers | Operation: 3 Num1: $1e+10$ Num2: $1e+10$ | Result: $1.00e+20$ | The program handled large numbers and displayed the result as $1.00e+20$. |
| 10. Edge Case for Small Numbers | Operation: 4 Num1: 0.0001 | Result: $0.0001 / 0.0002 = 0.50$ | The program correctly handled small decimal numbers and displayed 0.50. |

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| | Num2: 0.0002 | | |
| 11. Consecutive Operations | Operation: 1 Num1: 4 Num2: 3 Operation: 2 Num1: 10 Num2: 5 | First Result: 7.00 Second Result: 5.00 | Both operations worked correctly with expected results. |
| 12. Input Without Operation | Directly press Enter | Output: Invalid input. Please enter a number. | The program prompted "Invalid input" as expected. |