**Problem 1 (30 points)**

**Test cases:**

Test Case 1: {} and {3, 7, 9}

Test Case 2: {2, 7, 9} and {1}

Test Case 3: {1, 7, 10, 15} and {3, 8, 12, 18}

Test Case 4: {1, 3, 5, 5, 15, 18, 21} and {5, 5, 6, 8, 10, 12, 16, 17, 17, 20, 25, 28}

**Result:**

**Text

Description automatically generated**

**Problem 2 (70 points)**

**Ala Carte Multiplication**

**Test cases**

Test Case 1: 7000 \* 7294

Test Case 2: 25 \* 5038385

Test Case 3: -59724 \* 783

Test Case 4: 8516 \* -82147953548159344

Test Case 5: 45952456856498465985 \* 98654651986546519856

Test Case 6: -45952456856498465985 \* -98654651986546519856

**Result:**

Text

Description automatically generated

**Rectangle Multiplication**

Text

Description automatically generated