Assignment 2

Show all your work

Name: _____

Number: _____

Signature: _____

Score: ___/14

Problem 1: Write 9678 as a Kaktovik numeral.

0	1	2	3	4	5	6	7	8	9
ᗐ	ᐝ	ᐌ	ᐎ	᙭	᐀	ᐖ	ᐘ	ᐚ	ᐜ

10	11	12	13	14	15	16	17	18	19
ᐳ	ᐴ	ᐵ	ᐶ	ᐷ	ᐸ	ᐹ	ᐺ	ᐻ	ᐼ

List the place values in base-20 to see that $9678 = 1 \times 8000 + 4 \times 400 + 3 \times 20 + 18.$

Score: /2

Problem 2: Express the Hindu-Arabic numeral 447 in Mayan numeral.

0	1	2	3	4	5	6	7	8	9

10	11	12	13	14	15	16	17	18	19

$447 = 1 \times (18 \times 20) + 4 \times 20 + 7,$

Score: /2

Problem 3: Write the Egyptian numeral 𓅐𓆓𓍢𓏺𓏺𓏺𓏺𓏺𓏺𓈖𓈖𓈖𓏺 using a Hindu-Arabic numeral.

$$1\,213\,231$$

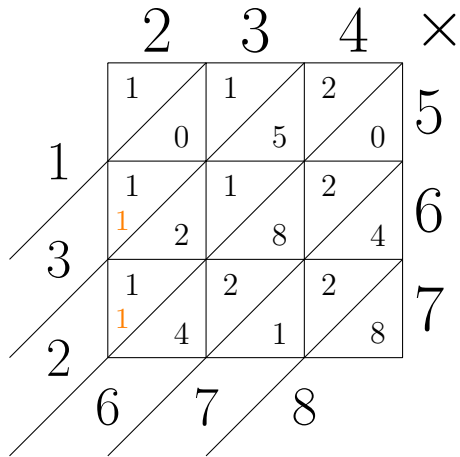| 1	10	100	1000	10 000	100 000	1 000 000

Using the table, we translate
$1 \times 1\,000\,000 + 2 \times 100\,000 + 1 \times 10\,000 + 3 \times 1000 + 2 \times 100 + 3 \times 10 + 1 = 1213231$

Score: /2

Problem 4: Multiply 234×567 using the galley method.

$$\boxed{132\,678}$$

$$
\begin{array}{c}
 \quad 2 \quad\; 3 \quad\; 4 \quad \times \\
\end{array}
$$

Problem 5: Compute $2023321_5 - 340413_5$ using the two-line algorithm.

$$\boxed{1132403_5}$$

Line up vertically
$$
\begin{array}{r}
2023321_5 \\
-\quad 340413_5 \\
\hline
1132403_5
\end{array}
$$

Problem 6: In the gardening club, Fire Horse was given a box of seedlings to plant. When she lined them up 5 in a row or 7 in a row, she had 3 left over in each case. If she lined them up 9 in a row, she had 1 left over. Find the second smallest number of seedlings that Fire Horse might have been given in her box of seedlings.

$$\boxed{388}$$

If we put 3 chickpeas aside, the remainder is a multiple of both 5 and 7, so a multiple of $\operatorname{lcm}(5,7) = 35$. Therefore the total number of chickpeas is one of
$3, 38, 73, 108, 143, 178, 213, 248, \ldots$.
The number of chickpeas is also 1 more than a multiple of 9, so
$1, 10, 19, 28, 37, 46, 55, 64, 73, 82, \ldots$.
The first number common between the two lists is 73, and the next is
$73 + \operatorname{lcm}(5,7,9) = 73 + 315 = 388$.