

# SOLUTIONS

## Graded Homework Assignment 1

I. Complete the following Base 5 Problem Set:

Addition table:

+	0	I	Λ	N	M
0	0	I	Λ	N	M
I	I	Λ	N	M	10
Λ	Λ	N	M	10	11
N	N	M	10	11	1Λ
M	M	10	11	1Λ	1N

Multiplication table:

x	0	I	Λ	N	M
0	0	0	0	0	0
I	0	I	Λ	N	M
Λ	0	Λ	M	11	1N
N	0	N	11	1M	1Λ
M	0	M	1N	1Λ	1N

A. Fill in the tables.

$$MNA = 4 \times 5^2 + 3 \times 5 + 2 \cdot 1 = 100 + 15 + 2 = 117$$

B. Convert: M N Λ to a base 10 number so that you will know its value.

Add: 
$$\begin{array}{r} \Lambda IM \\ + \Lambda OI \\ \hline M \Lambda O \end{array}$$

$$\begin{array}{r} MIMO \\ + \Lambda M \Lambda \\ \hline MMN \Lambda \end{array}$$

$$\begin{array}{r} I \Lambda I O \Lambda \\ + M I \Lambda \\ \hline I N O I M \end{array}$$

Multiply: 
$$\begin{array}{r} \Lambda IM \\ x \quad \Lambda \\ \hline M N N \end{array}$$

$$\begin{array}{r} MIM \\ x \quad \Lambda I \\ \hline I N N \Lambda \\ I M M M \end{array}$$

$$\begin{array}{r} I \Lambda N \\ x \quad M O I \\ \hline \end{array}$$

$$\begin{array}{r} I \Lambda N \\ x \quad M O I \\ \hline I \Lambda N \\ 11 O \Lambda O \\ \hline 11 O N \Lambda N \end{array}$$

II. Write the base 10 numerals in Babylonian numerals:

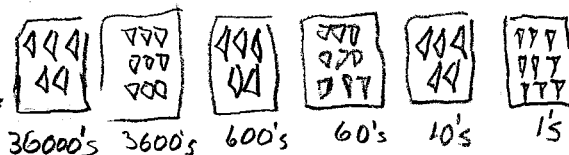
600  
360

1. 230 → 

2. 45 → 


3. 1007 → 


4. 18 → 



III. Convert the Babylonian numerals to base 10 numerals:

1.  → 23

2.  → 71

3.  → 61

4.  → 55