

Math 123-01
Fall 2025
Dr. Lily Yen

Quiz 2
Show all your work

Name: _____
Number: _____
Signature: _____
Score: ____/10

Problem 1: Convert 79_{10} into base-2.

$79 = 64 + 8 + 4 + 2 + 1 = 2^6 + 2^3 + 2^2 + 2^1 + 2^0 = 1001111_2$

Problem 2: The following Mayan numeral has three places. Express it as a Hindu-Arabic numeral.

 = $2 \times (18 \times 20) + 8 \times 20 + 12 = 892$

Problem 3: The following Kaktovik numeral has 4 places. Find its Hindu-Arabic numeral.

 = $11 \times 20^3 + 3 \times 20^2 + 6 \times 20 + 18 = 89\,338$

Problem 4: Convert $16\,748_{10}$ to a Babylonian numeral.

$16\,748 = 4 \times 60^2 + 39 \times 60 + 8 =$ 

Problem 5: Fire Horse likes to play with her model dragons. When she lines them up 6 in a row, she has 5 left over. When she lines them up 7 in a row, she finds her last row short of 3 dragons to complete a row. Suppose her collection of dragons contains at least 50, find the smallest possible number of dragons in her collection.

Say she has n rows of six. Then the total number of dragons is $6n + 5$. Similarly, if she has m rows of seven, the total is $7m - 3$. Therefore $6n + 5 = 7m - 3$, so $6n + 8 = 7m$. The solutions to this equation are

n	1	8	15	22	...
m	2	8	14	20	...
Total	11	53	95	137	...

This is another way of finding an answer compared to the solution to the last section of In-class assignment 2.