


Math 123-01
Summer 2025
Dr. Lily Yen

Assignment 2

Show all your work

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

Problem 1: Convert each of the following to Hindu-Arabic numerals base-10.


a. 

b. 

c. MCMXLVII

d. 10101101_2

e. $2CD_{16}$

f. 

a. Babylonian: $25 \times 60^2 + 34 \times 60 + 57 = 92\,097$

b. Kaktovik: $13 \times 20^2 + 7 \times 20 + 18 = 5358$

c. Roman: $1000 + 900 + 40 + 5 + 2 = 1947$.

d. Binary: $2^7 + 2^5 + 2^3 + 2^2 + 2^0 = 173$

e. Hexadecimal: $2 \times 16^2 + 12 \times 16 + 13 = 717$

f. Mayan: $1 \times (18 \times 20) + 4 \times 20 + 7 = 447$

Score: ____/8

Problem 2: Firehorse has a bag of gummy bears. If she gives 8 gummy bears each to a group of children, she has 5 left. If she gives 9 gummy bears each to the same group of children, she is short of 3. How many gummy bears are in her bag?

Let n be the number children. Then

$$8n + 5 = 9n - 3, \quad \text{so} \quad n = 8.$$

She therefore has $8n + 5 = 69$ gummy bears. Notice this question does not require modular arithmetic.

Score: ____/2