

Math 123-01
 Summer 2025
 Dr. Lily Yen

Quiz 2

Show all your work

Name: _____
 Number: _____
 Signature: _____
 Score: ____/11

Problem 1: Convert 5136_{10} into base 4.

$$5136 = 4^6 + 1040 = 4^6 + 4^5 + 16 = 4^6 + 4^5 + 4^2 = 1100100_4$$

Score: /2

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

$$\begin{array}{c} \cdot \cdot \\ \cdot \cdot \\ \hline \cdot \cdot \end{array} = 2 \times (18 \times 20) + 13 \times 20 + 7 = 987$$

Score: /2

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

$$\backslash W \backslash \nabla = 1 \times 20^3 + 4 \times 20^2 + 1 \times 20 + 17 = 9637$$

Score: /2

Problem 4: Convert 168748_{10} to a Babylonian numeral.

$$168748 = 46 \times 60^2 + 3148 = 46 \times 60^2 + 52 \times 60 + 28 = \text{𐎠𐎠𐎠 𐎠𐎠𐎠 𐎠𐎠𐎠}$$

Score: /2

Problem 5: In the Dungeon Theatre of the Dragoness, the seats are arranged 7 in a row to the left of the stage and 9 in a row to the right of the stage. Suppose the extended family of Fire Horse gathers to see a show in the Dungeon Theatre; if they all sit on the left of the stage, there are 4 members of the family without a seat. If they all sit on the right of the stage, there are 7 empty seats. Find the second smallest possible number of seats the Dungeon Theatre may have.

Say there are L rows on the left and R rows on the right. Then there are $7L$ seats on the left and $9R$ seats on the right. Therefore the family takes $7L + 4$ seats on the left or $9R - 7$ seats on the right, so $7L + 4 = 9R - 7$, so $7L + 11 = 9R$.

L	1	10	19	28
R	2	9	16	23
Total	$7L + 9R$	25	151	277

Score: /3

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