

Two pages, 4 problems, 10 points. Simplify each answer. No calculators.

Problem 1 (2 points). Write 7_{10} in base-2.

$$7 = 4 + 2 + 1$$

$$111_2$$

Problem 2 (2 points). Write 75_8 in base-10.

$$7 \cdot 8 + 5 = 56 + 5 = \boxed{61}$$

Problem 3 (2 points). How many light bulbs (on or off) do you need to count to 8?

$$3, \text{ since } 2^3 = 8$$

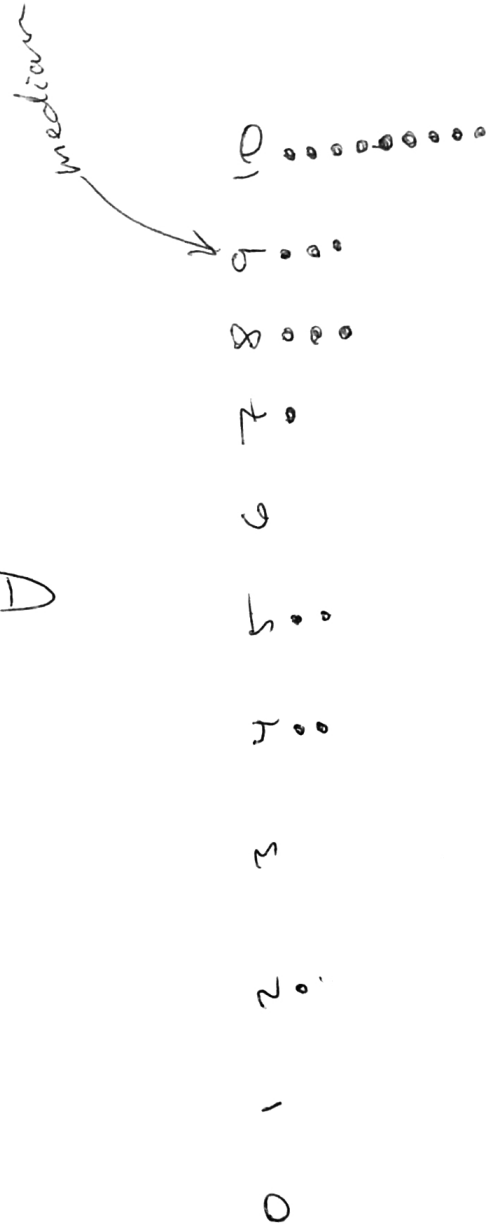
0 1 2 3 4 5 6 7 8 9 A B C D E F

Problem 4 (2 points each). In base-16, perform the following addition.

(a) $3+5$

8_{16}

Avg: 8.05
Mean: 9



(b) $ABC+14$

$C + 4 = 10$

$B + 1 = C \quad B + 2 = D$

$ABC + 14 = ADO$