Math 102 Exam #1 Key (Spring 2012)

1a. 2,328,240
1b. 2,478
1c. 305,644
1d. 392
1e. 804,235
1f. $(1 \times 60^2) + (3 \times 60) + 22 = 3,802$
1g. $(7 \times 60) + 9 = 429$
1h. 6,907
1i. 3,040
1j. $(12 \times 360) + (0 \times 20) + 7 = 4,327$
1k. $(6 \times 7200) + (1 \times 360) + 19 = 43,579$

2a. 𓎆𓎆𓎆𓏲𓏲𓏲𓏲𓏲𓏲

2b. MMCCCXLII

2c. $\overline{\text{LXXX}}$CDXCIX

2d. $\tau\text{♀}\epsilon$

2e. $\iota o \iota \text{f} \pi \kappa \delta$

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3a. $(3 \times 6^2) + (2 \times 6) + 5 = 125$

3b. $2^9 + 2^6 + 2^5 + 2^2 + 2 = 614$

3c. $(7 \times 12^3) + (11 \times 12^2) + (2 \times 12) = 13,704$

4a. $295 = (2 \times 5^3) + (1 \times 5^2) + (4 \times 5) = 2140_5$

4b. $320 = (1 \times 3^5) + (2 \times 3^3) + (2 \times 3^2) + (1 \times 3) + 2 = 102212_3$

4c. $5,887 = (1 \times 16^3) + (6 \times 16^2) + (15 \times 16) + 15 = 16\text{FF}_{16}$

5a. 1351_6

5b. D91C_{16}

5c. $4032_{12} - 952_{12} = 32\text{A}0_{12}$

5d. $473_8 \times 72_8 = 1166_8 + 42350_8 = 43536_8$

5e. $51\text{B}_{16} \times 1\text{A}_{16} = 330\text{E}_{16} + 51\text{B}0_{16} = 84\text{BE}_{16}$

6a. Quotient is 43_5, with no remainder:

$$\begin{array}{r} 4\,3_5 \\ 2\,2_5 \overline{)\,2\,1\,0\,1_5} \\ \underline{1\,4\,3} \\ 1\,2\,1 \\ \underline{1\,2\,1} \\ 0 \end{array}$$

6b. 45_7, R1:

$$\begin{array}{r} 4\,5_7 \\ 6_7 \overline{)\,4\,0\,3_7} \\ \underline{3\,3} \\ 4\,3 \\ \underline{4\,2} \\ 1 \end{array}$$