

WrittenHW 2

1. (\approx #6) For driver's license numbers issued in New York prior to September of 1992, the three digits preceding the last two of the number of a male with birth month m and birth date b are represented by $2b + 63m$. For females the digits are $1 + 2b + 63m$. Determine the dates of birth and sex(es) corresponding to the numbers 248 and 601
2. (\approx #8*) Suppose a and b are integers that divide the integer c . If a and b are relatively prime, does $ab = c$? Prove your conclusions. Show, by example, that if a and b are not relatively prime then ab need not divide c .
3. (\approx #36*) Identify and prove which transpositions errors involving adjacent digits are detected by the UPS check digit.
4. (\approx #44) Use the two-check digit error correction method described in Chapter 0 to append two check digits to the number 73445860.

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1. (\approx #46*) Let $S = \mathbb{R}$. If $a, b \in S$, define $a \sim b$ if $a - b \in \mathbb{Z}$. Show that \sim is an equivalence relation on S and describe the equivalence classes of S .
2. (\approx #48*) Let $S = \mathbb{Z}$. If $a, b \in S$, define aRb if $a + b$ is even. Prove that R is an equivalence relation and determine the equivalence classes of S .