book problems  
§6.1 # 1, 3, 7, 12  
§6.2 # 1, 4  
§7.2 #1, 4, 8, 13  

Non-book problem: (Computer problem) Find the least value of $N$ such that $M(N) = 10^k$ for $k = 1, 2, 3, 4, ...$ (as far out as you can get your computer to go). What does Merten’s conjecture say about the upper order of $M(N)$? Can you find a value of $N$ for which $M(N) > \sqrt{N}$?

Extra credit problem: Let $x = \sqrt{2}$, $y = \sqrt{2} + 2$. For $z \in \mathbb{R}$, let $[z]$ denote the greatest integer less than or equal to $z$.  
For all positive integers $n$, prove that $A = \{[nx] \mid n > 0\}$ and $B = \{[ny] \mid n > 0\}$ partition the set of positive integers, i.e., $A$ and $B$ don’t intersect and their union is $\mathbb{Z}^+$.  

◊ automatic A+ in the course if you can find such an $N$