MACM 201 Homework 1 (Quiz Sep. 12)

Textbook problems:

Section	Question
1.1-2	16
1.1-2	20
1.1-2	24
1.1-2	30
1.1-2	32(a)
1.3	6
1.3	8
1.3	18
1.3	28
1.4	10
1.4	12
1.4	26
1.4	28(a,b)

Instructor question(s): In this question we consider sequences $A_1, A_2, \ldots, A_k$ where each A_i is a subset of $\{1, 2, \ldots, n\}$.

1. How many sequences $A_1, A_2, \ldots, A_k$ have the property that $\cup_{i=1}^{k} A_i = \{1, 2, \ldots, n\}$?

2. How many sequences $A_1, A_2, \ldots, A_k$ have the property that $A_1 = \emptyset$, $A_k = \{1, 2, \ldots, n\}$ and $A_i \subseteq A_{i+1}$ holds for every $1 \leq i \leq k-1$?