Chapter 1 outline:

- Introduction, sets and elements (last week Wednesday)
- Set operations; visual verification of set propositions (last week Friday)
- Introduction to SML; cardinality and Cartesian products (Monday)
- Making types in SML (Today)
- Making functions in SML (Friday)

Today: Making stuff in SML

- A few follow-up points from last time
- Making our own types
- Making our own operations (time permitting)
1.8.1 What is the cardinality of \( \{0, 1, 2, \ldots, n\} \)?

1.8.3 One might be tempted to think \( |A \cup B| = |A| + |B| \), but this is not true in general. Why not? (Assume \( A \) and \( B \) are finite.)

1.8.6 Describe three distinct partitions of the set \( \mathbb{Z} \).
1.9.5 Based on our description of the real number plane as a Cartesian product, explain how a line can be interpreted as a set.

1.9.6 Explain how \( \mathbb{C} \), the set of complex numbers, can be thought of as a Cartesian product.

1.9.7 Any rational number (an element of set \( \mathbb{Q} \)) has two integers as components. Why not rewrite fractions as ordered pairs (for example, \( \frac{1}{2} \) as \((1, 2)\) and \( \frac{3}{4} \) as \((3, 4)\)) and claim that \( \mathbb{Q} \) can be thought of as \( \mathbb{Z} \times \mathbb{Z} \)? Explain why these two sets cannot be thought of as two different ways to write the same set. (There are at least two reasons.)
#1(5, 4) + int(4.0 / 3.1)
(5 + 7, String.sub("hello", 2))
For next time:

Pg 36: 1.9. (3, 4, 8, 9, 10, 14, 16)
Pg 40: 1.10. (1-4)

SML problems should still be submitted on paper with the rest of the assignment.

Re-read 1.11 (if necessary)
Read 1. (12 & 13).

(No quiz)