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 (this past Monday)
- Making types and functions in SML (Today)
- More about functions in SML; introduction to lists [Chapter 2] (Friday)

Today: *Making stuff in SML*

- A few follow-up points from last time
- Making our own types
- Making our own operations

**1.8.6** Describe three distinct partitions of the set $\mathbb{Z}$.

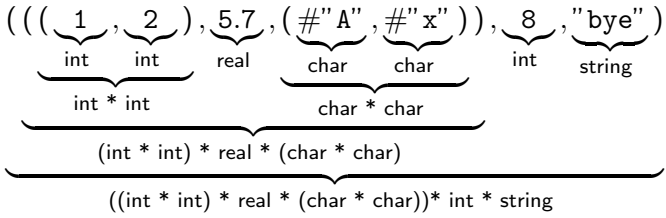
**1.9.5** Based on our description of the real number plane as a Cartesian product, explain how a line can be interpreted as a set.

**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))
```


(((1, 2), 5.7, (#"A", #"x")), 8, "bye")
int
int
real
char
char
int
string
int * int
char * char
(int * int) * real * (char * char)
((int * int) * real * (char * char))* int * string

**For next time:**

*Pg 36: 1.9.(14 & 16)*
*Pg 40: 1.10.(1-4)*

*ML problems should still be submitted through Schoology with the rest of the assignment.*

*Re-read 1.11 (if necessary)*
*Skim 1.(12 & 13).*
*Read 2.1 (focus on this one)*
*Skim 2.2*

*Take quiz*