

## Risp 14: Geoarithmetic Sequences

Pick two numbers between 0 and 1, call them  $a$  and  $b$ .  
Generate a sequence from these numbers as follows:

1. Take  $a$  as the first term.
2. Add  $b$  to this to get the second term.
3. Multiply this by  $b$  to get the third term.
4. Add  $b$  to this get the fourth term.
5. Multiply this by  $b$  to get the fifth term.

And so on...

What are the first six terms of your sequence?

What do you think will happen to the  $n$ th term as  $n$  gets larger?

What if we change  $a$ ? Change  $b$ ?

*You will find a brief program on a graphics calculator  
or Excel useful to explore these questions.*

What happens if we remove the restriction  
that  $a$  and  $b$  must be between 0 and 1?

What different types of behaviour  
can a sequence like this exhibit?

Can you predict what will happen for any given  $a$  and  $b$ ?