Patterns, Rules, and Spreadsheets

> You need: a computer spreadsheet

ACTIVITY ONE

Hannah uses two different calculation methods to make a spreadsheet record of her weekly savings.

a. How much is in Hannah's account at the start?

b. How much does Hannah save each week?

c. Make Hannah's spreadsheet.
Use both calculation methods but display her savings, not the formulae. (Formulae don't usually show.)

d. Work out how much Hannah can save after 52 weeks.

e. Hannah makes the calculation 8 x 75 + 63 = 663.
How can she interpret the value 663?

f. Write the calculations to work out Hannah's savings after:
   i. 83 weeks
   ii. 147 weeks.

g. Which of Hannah's two methods do you think is the more efficient? Explain your answer.

Hannah's Savings (SS)

B3 = 63

	Week	Savings ($) Method 1	Savings ($) Method 2
1	Week	Savings ($)	Savings ($)
2		Method 1	Method 2
3	0	63	=8*A3+63
4	1	=B3+8	=8*A4+63
5	2	=B4+8	=8*A5+63
6	3	=B5+8	=8*A6+63
7	4	=B6+8	=8*A7+63
8	5	=B7+8	=8*A8+63
9	6	=B8+8	=8*A9+63
10	7	=B9+8	=8*A10+63
11			

ACTIVITY TWO

1. Marnie challenges Tom to skip-count backwards from a number she gives him.
Tom makes a spreadsheet to work out the numbers.

a. What is the starting number?

b. Write the first 8 numbers in Tom's sequence.

c. Calculate the following numbers in Tom's sequence:
   i. the 30th number
   ii. the 73rd number
   iii. the 145th number.

Skip-count Backwards (SS)

B2 = 504–3*A2

	Position of number	Number	
2	1	=504–3*A2	
3	2		
4	3		
5	4		
6	5		
7	6		
8	7		
9	8		

2. Marnie makes a spreadsheet to skip-count forwards.

a. What is Marnie's starting number?

b. Write the first 8 numbers in Marnie's sequence.

c. Calculate the following numbers in Marnie's sequence:
   i. the 99th number
   ii. the 256th number
   iii. the 879th number.

Skip-count Forwards (SS)

B2 = 5+12*A2

	Position of number	Number	
2	1	=5+12*A2	
3	2		
4	3		
5	4		
6	5		
7	6		
8	7		
9	8		

Devising and using rules for number patterns

1. **a.** Make a spreadsheet to show the number sequence 23, 30, 37, ...
   b. Calculate the following numbers in the sequence:
      i. the 37th number
      ii. the 187th number
      iii. the 1 279th number.

2. **a.** Make a spreadsheet to show the number sequence 10 001, 9 992, 9 983, ...
   b. Calculate the following numbers in the sequence:
      i. the 56th number
      ii. the 83rd number
      iii. the 999th number.

Mika and Hine offer after-school as well as school-holiday gardening services.

a. Using formulae, complete the spreadsheet.

b. Decide when it is cheaper to employ Mika and when it is cheaper to employ Hine. Explain your reasoning.

	Gardening Services (SS)
B2	▼ ƒx X ✓ =13+17*A2

	Number of hours	Mika's charge ($)	Hine's charge ($)
2	0	13	
3	1		
4	2		
5	3		
6	4		
7	5		
8	6		
9	7		

Mika's Gardening Service

$17 per hour plus $13 travelling

Hine's Gardening Service

$13 per hour plus $25 travelling

c. Find out what happens when Mika decreases his hourly charge by $1.

d. Hine decides to decrease her travelling charge to $16.
What happens now?