CONCEPT MAP

FORM 4

PROGRESSIONS

Arithmetic progressions

A number sequence such that the difference between a term with its preceding term is a constant.

Common difference

$d = T_{n+1} - T_n$

The *n*th term

$T_n = a + (n - 1)d$

Sum of the first *n* terms

$S_n = \frac{n}{2}[2a + (n - 1)d]$

or

$S_n = \frac{n}{2}(a + l)$

Geometric progressions

A number sequence such that the ratio between a term with its preceding term is a constant.

Common ratio

$r = \frac{T_{n+1}}{T_n}$

The *n*th term

$T_n = ar^{n-1}$

Sum of the first *n* terms

$S_n = \frac{a(r^n - 1)}{r - 1}, r > 1$

or

$S_n = \frac{a(1 - r^n)}{1 - r}, r < 1$

Sum to infinity

$S_\infty = \frac{a}{1 - r}, -1 < r < 1$

Solving problems in daily real-life situations involving arithmetic progression and geometric progression