SCAN ME

HIGHER MATHS

SEQUENCES CHECKLIST

Covering every mandatory skill for Recurrence Relations. Use the Clelland Maths Masterclass video to master these Paper 1 and Paper 2 techniques.

1 BUILDING & STEPPING

- [ ] **Calculate Terms**
  Apply $u_{n+1} = au_n + b$ to find future terms like u_2 or u_4.
- [ ] **Backward Iteration**
  Rearrange to find a previous term (e.g., finding u_0 from u_1).
- [ ] **Identify Initial Values**
  Distinguish between "initial" (u_0) and "term 1" (u_1).

2 LIMIT THEORY

- [ ] **The Existence Mark**
  State that a limit exists because $-1 < a < 1$.
- [ ] **Calculate Limit (L)**
  Use the formula $L = \frac{b}{1-a}$ or solve $L = aL + b$.

3 MODELLING IN CONTEXT

- [ ] **Write Relations from Text**
  Convert growth/decay narratives into an equation (e.g., declining population).
- [ ] **Long-term Stabilization**
  Interpret the limit as a steady state in real-life situations.

4 ADVANCED ALGEBRA

- [ ] **Simultaneous Equations**
  Calculate unknown a and b from three terms (i.e u_0, u_1 and u_2).

- [ ] **Convergence Range**
  Find values of k for which a sequence converges.

- [ ] **Quadratic Inequalities**
  Solve quadratics (e.g., $k^2 \ldots$) to find the range of values for a limit or specific condition.

SQA EXAM TIPS

- **The Limit Existence mark** requires you to explicitly state $-1 < a < 1$.
- **Always provide a concluding statement** relating your limit back to the context.
- **For non-calculator Paper 1,** keep multipliers as exact fractions (e.g., $\frac{1}{5}$).