**📘 Life & Retirement (LNR) Financial Concepts Cheat Sheet**

**🔹 1. COMMON METRICS & RATIOS**

* **Persistency Ratio** = (Policies in force after n months / Total policies issued at start) × 100
* **Claims Ratio** = Claims Paid / Premiums Earned
* **Solvency Ratio** = Available Solvency Margin / Required Solvency Margin
* **Loss Ratio** = Incurred Claims / Earned Premium
* **Expense Ratio** = Underwriting Expenses / Earned Premium
* **Combined Ratio** = Loss Ratio + Expense Ratio
* **New Business Margin** = (Present Value of Future Profits / New Premiums) × 100
* **Surrender Ratio** = (Policies surrendered / Policies in force) × 100
* **Embedded Value (EV)** = Net Asset Value (NAV) + Value of In-force Business (VIF)
* **Value of New Business (VNB)** = Present Value of Future Profits – Cost of Capital

**🔹 2. TIME VALUE & ANNUITY FORMULAS**

* **Future Value (FV)** = PV × (1 + r)^n
* **Present Value (PV)** = FV / (1 + r)^n
* **PV of Annuity** = Pmt × [(1 - (1 + r)^-n) / r]
* **FV of Annuity** = Pmt × [((1 + r)^n - 1) / r]
* **Perpetuity PV** = Pmt / r
* **Annuity Due (PV)** = PV × (1 + r)
* **Discount Factor** = 1 / (1 + r)^n

**🔹 3. INSURANCE PRODUCT CONCEPTS**

* **Term Insurance**: Pure risk, no maturity, low premium
* **Whole Life Insurance**: Life-long cover, includes savings (cash value)
* **Endowment Plan**: Insurance + savings, pays on death or survival
* **ULIP**: Unit Linked Insurance Plan – market-linked investment + insurance
* **Annuities**:
  + Immediate: Payout starts immediately
  + Deferred: Payout starts later
  + Fixed: Guaranteed returns
  + Variable: Market-driven returns

**🔹 4. RETIREMENT PRODUCTS & METRICS**

**Products:**

* 401(k), IRA, Roth IRA (US)
* NPS, EPF, PPF (India)
* Pension Funds (Defined Benefit or Contribution)

**Metrics:**

* **Funded Status** = Plan Assets – Plan Liabilities
* **Glide Path**: Gradual shift from equity to debt with age
* **Replacement Ratio** = Post-retirement income / Pre-retirement income
* **Contribution Rate**: % of salary invested (e.g., 10–15%)
* **Withdrawal Rate**: Sustainable withdrawal rate (e.g., 4% rule)

**🔹 5. ACTUARIAL / VALUATION METRICS**

* **Net Premium**: Premium covering risk + expenses
* **Gross Premium**: Net premium + loading for profits
* **Reserve (Liability)** = Present value of future claims – future premiums
* **Mortality Rate**: Probability of death at a given age
* **Lapse Rate**: % of discontinued policies
* **DCF**: Discounted Cash Flow to value insurance business

**🔹 6. DASHBOARDS / KPIs**

**For Life Insurance:**

* Policy count trend
* Premium income (Annualized)
* Persistency rate
* Claims incurred
* Sum Assured in force
* New Business Value

**For Retirement:**

* Assets Under Management (AUM) by segment
* Goal progress vs target
* Contribution vs withdrawal ratio
* Client age-band distribution
* Annuity vs Lump Sum preference

**🔹 7. REGULATIONS & STANDARDS**

| **Regulation** | **Region** | **Purpose** |
| --- | --- | --- |
| **Solvency II** | EU | Capital adequacy |
| **IRDA** | India | Life & health insurer compliance |
| **IFRS 17** | Global | Insurance contract accounting |
| **GAAP / STAT** | US | Financial reporting |
| **SEC Filings (10-K, 10-Q)** | US | Disclosures for listed insurers |